





The Milbank Memorial Fund  
**QUARTERLY**

CONTENTS

	<i>Page</i>
IN THIS ISSUE	3
SOCIAL STRESS AND MENTAL DISEASE FROM THE EIGHTEENTH CENTURY TO THE PRESENT: SOME ORIGINS OF SOCIAL PSYCHIATRY	<i>George Rosen, M.D., Ph.D.</i> 5
SOME PROBLEMS IN THE COLLECTION AND ANALYSIS OF MORBIDITY DATA OBTAINED FROM SAMPLE SURVEYS	<i>Ann Cartwright</i> 33
A DEMOGRAPHIC ASPECT OF INTERSTATE VARIATIONS IN AMERICAN FERTILITY, 1800-1860	<i>H. Yuan T'ien</i> 49
DEMOGRAPHIC AND SOCIAL ASPECTS OF CHILDLESSNESS: CENSUS DATA	<i>Wilson H. Grabill and Paul C. Glick</i> 60
ANNOTATIONS	
A History of Public Health	<i>Wilson G. Smillie, M.D.</i> 87
Population: An International Dilemma	<i>John E. Gordon, M.D.</i> 90
Abortion in the United States	<i>Robert G. Potter, Jr.</i> 92
The Population of Japan	<i>Warren S. Thompson</i> 94

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FOR the past several years we have priced the QUARTERLY at approximately one-fourth of the yearly cost of production. In January, 1958, the cost of production was again increased so that it was five times the subscription price. In January, 1959, there will be another advance in the printing costs, and the budget allotted the QUARTERLY will no longer cover the costs. We have, therefore, been obliged to increase the subscription price as of the January 1959, issue to \$2.00 per year—approximately one-third of the yearly cost of production and distribution.

## IN THIS ISSUE

**I**N the ten years since an article on "Mental Hygiene and Socio-Environmental Factors" by R. H. Felix and R. V. Bowers was published in the *Quarterly*, the relation of social stress to the occurrence of mental disorders has been the subject of considerable research. Last summer Professor George Rosen, historian, sociologist, and public health physician, delivered an erudite paper tracing the development of the idea that social stress might favor the occurrence of mental disorders from the Age of Enlightenment until today. Such an analysis of the way in which a particular kind of hypothesis has developed can be of aid to the investigator. It also can be of help to those who follow the sequence of efforts to validate the hypothesis. Dr. Rosen's paper is printed in this issue.

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Sickness surveys in which people are asked to report any ill health experienced during some preceding period of time are the only sources of information on morbidity of all types and all degrees of severity. The numbers of such surveys have been increasing in recent years, and much attention has been given to the effect of different methods of questioning on the comparability of data from different inquiries and on completeness of reporting. Individuals differ in their attitudes toward what constitutes illness and disability, and their responses are influenced by the types of questions which are asked. In the article "Some Problems in the Collection and Analysis of Morbidity Data Obtained from Sample Surveys," Ann Cartwright gives a detailed description of the

method of questioning used in a survey of sickness in London and compares the results with those obtained in another English survey.

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An article "A Demographic Aspect of Interstate Variations in American Fertility, 1800-1860," by H. Yuan T'ien throws light on the correlation that once existed between sex ratios and fertility ratios in the thinly populated frontier states as compared with the larger settled states of the Atlantic Seaboard. The author's hypothesis was that "the higher the sex ratio (the lower the age at marriage for females and the higher the proportion of females married), the higher the fertility." The hypothesis is partially sustained for the period considered, using states as units. The sex composition of the nation as a whole did not change much during this period, however, so this factor could not explain the declines in national fertility ratios during this period.

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The changing levels and differential patterns of childlessness are matters of much concern to students of demographic and medical problems. This issue contains a paper on this subject entitled "Demographic and Social Aspects of Childlessness: Census Data," by Wilson H. Grabill and Paul C. Glick. It presents available census data on trends and differentials in proportions of women reporting that they had never borne a child. The data are analyzed by such factors as age, color, detailed marital status, duration of marriage, labor force status, educational attainment of the woman, and occupation and income of the husband. The writers state that to their knowledge, "this is the first time that census data on childlessness have been brought together in a report dealing with that topic alone."

# SOCIAL STRESS AND MENTAL DISEASE FROM THE EIGHTEENTH CENTURY TO THE PRESENT: SOME ORIGINS OF SOCIAL PSYCHIATRY<sup>1</sup>

GEORGE ROSEN, M.D., PH.D.<sup>2</sup>

## INTRODUCTION

THERE is a widespread conviction today that a close interdependence exists between the social environment in which individuals live and the development of mental illness. The nature of this interplay is not yet fully explained, but it is felt that an important factor, possibly the most important single element leading to mental disorder is the failure of society to make adequate provision for conditions essential to the mental health of its members. By its failure to create and to maintain such conditions, society is responsible for stresses resulting from rapid social change or cultural lag which produce mental conflicts and breakdowns (1).

According to Rennie and Woodward, "mental health cannot be developed in a social vacuum. Powerful factors operate against it as our present society is constituted. . . . Mental health can only be achieved in an environment which provides opportunities for self-expression, social usefulness, and the attainment of human satisfactions." (2) From this position it is not far to the standpoint that individual breakdowns are actually indices of a sick society, that society is actually the patient. "There is a growing realization among thoughtful persons," wrote Lawrence K. Frank in 1936, "that our culture is sick, mentally disordered, and in need of treatment. . . . The disintegration of our traditional culture, with the decay of those ideas, concepts, and beliefs upon which our social and individual lives were organized, brings us face to face with the problem of treating society, since individual therapy or punishment

<sup>1</sup> A public lecture delivered July 8, 1958 at the Institute of Psychiatry (Maudsley Hospital), University of London.

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no longer has any value beyond mere alleviation of our symptoms." (3)

Confronted by this challenge, workers in the medical and social sciences have endeavored to get to the roots of this problem. If cultural processes and factors are in some way responsible for the occurrence of mental disease, it should be possible to demonstrate them by comparative examination of differing societies and cultural groups of varying complexity. Virtual absence of certain mental disorders in some preliterate groups has been reported by anthropologists, sociologists and psychiatrists. Moloney reported a strikingly low incidence of psychosis among native Okinawans, and attributed it to their mothering methods, especially breast-feeding. (4) A study of Okinawan immigrants to Hawaii, however, has shown they have a rate of psychosis significantly higher than other groups there, even though the same mothering methods are used. (5) What is different is that the Okinawan in Hawaii has to cope with a depreciated social situation; and the stress and trauma attendant upon this change have been incriminated as the responsible elements. Similar observations have been made by Carothers in Kenya (6), while additional reports bearing on this problem have come from Laubscher, Kardiner, and several others. (7) Related to such reports is the study of the Hutteries, an Anabaptist sect living in the northwestern United States and Canada, which was undertaken because "of their reputation of being virtually free of psychotic breakdowns and antisocial activities. . . ." (8) As it turned out, this belief did not hold up under closer scrutiny.

Another way of studying the relation of factors such as social change and cultural disintegration to mental illness is to study incidence trends, that is, to see whether there is an increase or decrease of various mental disorders over a period of time. A number of provocative and partly illuminating studies on this theme have recently appeared. Two of these are of interest as representing types of work in this field. In 1948, Halliday brought out his *PSYCHOSOCIAL MEDICINE*, which offers the

thesis that cultural changes over the past seventy-five years have improved the physical health of the population, but have led to a deterioration of mental health as judged by the rising incidence of psychosomatic disorders. (9) Halliday advances the view that in the 1870's the physical atmosphere of infancy was poor, but psychologically it had much to commend it; the reverse is true today. Five years later, in 1953, Goldhamer and Marshall came to a contrary conclusion with regard to the psychoses. (10) Based on an analysis of admissions to Massachusetts institutions for the insane from 1840 to 1950, they concluded that there has been no long-term increase in the incidence of psychoses in early and middle life. Up to the age of fifty, the rates a hundred years ago and today are roughly the same. Whatever differences do exist, are due entirely to the large number of admissions today for psychoses of those over fifty. In short, there seems to be no reason to believe that there has been any great change in the conditions causing psychosis at least in the United States, for a period of a hundred years. Goldhamer and Marshall also suggest the possibility that psychosis is a condition, independent of environmental conditions, and due to some physiological or hereditary aberration.

The same year that saw the publication of the study by Goldhamer and Marshall also saw the appearance of a report by the Expert Committee on Mental Health of the World Health Organization. (11) According to this group "Certain workers who have attempted a study of this matter in economically underdeveloped countries have the strong impression that psychiatric disorders are much less prevalent in some of these areas. The view has been put forward, for instance, that incidence of psychiatric disorders in tribal Africans is one-tenth of that usually found in Western Europe and North America." At the same time, the report points out that other workers "hold the view that . . . psychiatric disorders have a rather constant frequency in all societies." (12)

The fact is that adequate data on which to form even a relatively valid judgment on these matters are not available in

most parts of the world. Without a population census, the frequency of mental disorders cannot be determined. Studies of incidence and prevalence are difficult enough to carry out in countries like England or the United States where institutional facilities and trained personnel are available. Among primitive groups, accurately recorded observations and impressions are the most one can expect. Statistics in such studies must therefore be treated with great caution. Furthermore, judgments expressed and positions taken by various workers concerned with mental disease may themselves be determined by social values of which they may not even be aware. (13)

Nonetheless, one cannot overlook the fact that from the eighteenth century right down to the present day students of mental illness have been preoccupied with the problems sketched above. Two questions appear over and over in writings on the subject. One was "Is the number of the insane increasing?" And an answer to this question was at the same time also an answer to the question "Does civilization cause more mental illness than simpler stages of cultural development?" These questions imply a causal theory, namely, that social relationships and developments are deeply and significantly involved in the causal nexus which produces mental disease. Examination of this theory in historical perspective may therefore illuminate the current situation by enabling us to see its sources and how these may have determined our approach to the problem of mental illness and its causation.

#### SOCIAL ORDER AND MENTAL HEALTH

The Enlightenment and the French Revolution dominate the thought of the eighteenth century on the connections between social relationships, social change, and mental disorder. In the intellectual climate of the Enlightenment, Design, Nature, Natural Law, Reason, and Happiness were key ideas. It was accepted as a basic premise that the world had been established by the Creator according to a definite plan, within which there were ordered ways of behaving. These ordered ways were the

laws of nature, which redounded to the glory of the Creator and the greater good of man. Indeed, the Creator had so designed the human body that it would flourish when it lived in harmony with its political and social environment, and conversely He had so framed the political order that human health was fostered by good social institutions. These views were sharply formulated and applied by Benjamin Rush, that remarkable exponent of the Enlightenment in America. In his "Inquiry into the Natural History of Medicine among the Indians of North America," which was read before the American Philosophical Society in 1774, Rush observed that disease, political institutions, and economic organization were so interrelated that any general social change produced accompanying changes in health. (14) Twenty-five years later, in 1799, Rush published *THREE LECTURES ON ANIMAL LIFE* in which he reiterated this view.

"In no part of the human species," he said, "is animal life in a more perfect state than in the inhabitants of Great Britain, and the United States of America. With all the natural stimuli that have been mentioned, they are constantly under the invigorating influence of liberty. There is an indissoluble union between moral, political, and physical happiness; and if it be true, that elective and representative governments are most favourable to individual as well as national prosperity, it follows of course, that they are most favourable to animal life. . . ." (15)

Rush applied this idea to a concrete case in his "Account of the Influence of the Military and Political Events of the American Revolution upon the Human Body." (16) Ostensibly this inquiry was intended to determine how conditions during the Revolution affected its friends or enemies. Actually, the findings were predetermined by Rush's conviction that individual and social health depended on correct political principles.

In general, good health fell to the lot of the revolutionists. "An uncommon cheerfulness prevailed everywhere among the friends of the Revolution. Defeats, and even the loss of relations

and property, were soon forgotten in the great objects of the war." (17) More specifically, Rush observed among other findings that hysterical women who favored the Revolution were cured of their condition. Furthermore, "marriages were more fruitful than in former years and . . . a considerable number of unfruitful marriages became fruitful during the war." (18) Finally, many persons who had been sickly were restored to perfect health owing to change of occupation or location as a result of war conditions.

Sharply contrasted with the good health of the patriots was the mental and physical breakdown experienced by those Americans who remained loyal to England. In many instances, they tended to suffer from a hypochondriasis, which was popularly called the "protection fever" and which Rush termed *Revolutioniana*. It was called "protection fever" because it appeared to rise from the excessive concern of the Loyalists for the protection of their persons and possessions. This basic cause was accentuated by such other factors as loss of power and influence, the suspension of the Established Church, changes in manners and diet as a result of inflation, and lastly the legal and extra-legal oppression to which the Loyalists were subjected.

These effects upon the human body were produced through the medium of the mind. Thus, the patriots themselves were not necessarily immune to such conditions, and Rush observed that following the peace in 1783, the Americans, unprepared for their new situation, were affected by an excess of liberty.

"The excess of the passion for liberty," wrote Rush, "inflamed by the successful issue of the war, produced, in many people, opinions and conduct which could not be removed by reason nor restrained by government. For a while, they threatened to render abortive the goodness of heaven to the United States, in delivering them from the evils of slavery and war. The extensive influence which these opinions had upon the understandings, passion and morals of many of the citizens of the United States, constituted a species of insanity, which I shall take the liberty of distinguishing by the name of *Anarchia*." (19)

In short, proper political stimuli, and a stable and ordered society were required for health. Mental health implied a society which would provide the proper stimuli and necessary conditions for well-being, and this was to be found in an agricultural economy (20) such as existed in the young American Republic.

#### REVOLUTION, WAR AND MENTAL ILLNESS

The views of Benjamin Rush are worthy of consideration for two reasons. For one thing, he called attention to the effects on mental health of acute social changes, and secondly he placed such phenomena in a theoretical context, derived partly from his medical, and partly from his social views. The impact of wars, revolutions, and similar phenomena as productive of mental illness is reported by other writers, some of whom cite Rush.

Pinel attributed to the French Revolution an increase in the number of persons affected by psychoses. Marc-Antoine Petit of Montpellier reviewed the effect of the Revolution on public health, and considered mental illness in this context. (21) While aware of the views of Rush, he is more circumspect in uncovering a causal connection between various morbid states and the social tensions and stresses created by the Revolution. Nonetheless, Petit likewise agreed that mental aberrations had apparently appeared in the wake of the revolutionary turmoil. The revolutions of 1848 in turn produced similar observations. Brierre de Boismont reported that immediately after the February events and the bloody June battles in Paris, a large number of patients were admitted to the two institutions for which he was responsible. (22) Similarly, Hospital, physician to the Asylum at Clermont-Ferrand, claimed in 1875 that the Franco-Prussian War and the civil war that followed it in 1871 increased the number of cases of psychosis in France. (23)

Another observation of this type was reported by Belgrave in 1867 from Denmark. "It appears," he said, "that the evident decadence of Danish power of late years has so afflicted the national sentiment as to induce a general gloom and melancholy.

The traveller may walk through Copenhagen without meeting a smiling countenance. A conviction pervades the Danish nation that it is doomed to absorption by Germany; and this feeling has induced a settled melancholy, which the universal well-being of the people and the excellence of their government only contribute to make more conspicuous. In social intercourse the destiny of the nation is constantly discussed and lamented. One result of this painful feeling is an increase in the proportion of lunatics to the general population. The predominating form of mental disease is melancholia, characterized in the majority of instances by a distressingly strong tendency to suicide." (24)

The interest of this observation resides as well in the implication that the entire group is mentally ill, and that the psychotics are a product of a wide prevalent pathological condition. In turn, the conditions and the factors which lead to disease arise from or have been intensified by political developments, such as the decline of national power. Clearly, there is also an implication in Belgrave's observation that one approach to a possible understanding of the social etiology of mental disorders would be to consider the occurrence of psychoses in time and space. Actually, efforts of this type had already been undertaken earlier in the 19th century. One general line of development was the discussion of the connection between civilization and psychosis; the other was the endeavor to establish a theory of epidemic disease on a historical basis, which would also take account of psychic epidemics.

#### PSYCHIC EPIDEMICS AND HISTORICAL PROCESS

The latter position was most fully developed by Rudolf Virchow, in conjunction with his co-workers R. Leubuscher and S. Neumann. As an extension of his views on the relation of medicine to society, Virchow developed a theory of epidemic disease as a manifestation of social and cultural maladjustment. (25) Reasoning by analogy, he drew a parallel between the individual and the body politic: "If disease is an expression of individual life under unfavorable conditions then epidemics must

be indicative of major disturbances of mass life." (26) The disturbances are socio-economic, for example, business depressions, unemployment, and the like. "Don't we see that epidemics everywhere point to deficiencies of society?" Virchow asked. "One may point to atmospheric conditions, general cosmic changes and the like, but in and of themselves these never cause epidemics. They always produce them only where, because of poor social circumstances, people have lived for a long time under abnormal conditions." (27) Virchow differentiated natural and artificial epidemics, basing the distinction on the degree to which cultural factors are interposed between nature and man.

Artificial epidemics he considered as attributes of society which occur not only as a result of social contradictions, but also as significant manifestations of historical trends and development. Nodal points in history, periods of political and intellectual revolution, are marked by such outbreaks of disease. "History has shown more than once," Virchow declared in August 1848, "how the fates of the greatest empires were decided by the health of their peoples or of their armies, and there is no longer any doubt that the history of epidemic disease must form an inseparable part of the cultural history of mankind. Epidemics correspond to large signs of warning which tell the true statesman that a disturbance has occurred in the development of his people which even a policy of unconcern can no longer overlook." (28) This train of thought was carried to its logical conclusion in 1849. "Epidemic diseases exhibiting an hitherto unknown character appear and disappear," Virchow asserted, "after new culture periods have begun, often without leaving a trace. As cases in point take leprosy and the English sweat. The history of artificial epidemics is therefore the history of disturbances which the civilization of mankind has experienced. Its changes show us with powerful strokes the turning points at which civilization moves off in new directions. Every true cultural revolution is followed by epidemics, because a large part of the people only gradually enter into the new cultural movement and begin to enjoy its blessings." (29)

Within his socio-historical theory of epidemic disease, Virchow included the psychic epidemics, a phenomenon and a concept in which interest declined and almost disappeared during the later 19th century under the influence of bacteriology and biological determinism, but in which interest has again been aroused in the present century. (30) Virchow pointed out that "The artificial epidemics are physical or mental, for mental diseases also occur epidemically and tear entire peoples into a mad psychotic movement. Psychiatry alone enables the historian to survey and understand the major fluctuations of public opinion and popular feeling, which on the whole resemble the picture of individual mental illnesses." (30) While Virchow examined the relations of psychosis to contemporary emotional states, other physicians who shared his views to a greater or lesser degree investigated the same problem historically. Neumann refers approvingly to a work by Ideler on religious madness, and to Leubuscher's adaptation of Calmeil's study of psychosis over a period of four hundred years. "Both have demonstrated," he wrote, "how the various forms of lunacy are essentially determined by the contemporary state of civilization of a society." (31)

This discussion of psychic epidemics was stimulated by the appearance in Berlin at the time of a child who performed miracles. (32) It was alleged that this child could cure illness, and it was reported to have been visited by some 10,000 people daily among whom 3,000 to 4,000 "cures" were effected. Occurrences of this type are not uncommon in history in the wake of military defeats or as a reaction to suppressed revolutions. Similar phenomena can be observed in Germany after the First World War, in England under Cromwell's regime, or in Czarist Russia after the defeat of the 1905 Revolution. (33) Virchow explained this event as an abnormal expression of suppressed revolutionary energies that had not been discharged. His interpretation must be seen in terms of a concept of an "organic" historical process, clearly a concept with Hegelian overtones. Virchow tended in general to view the psychological reactions

observed during and after the 1848 revolution as a psychic epidemic caused by interference with the historical process. (34)

Unfortunately, this theory of psychic epidemics and its implications have never been explored in any systematic fashion. In our own time a few authors, among them Hellpach, Scheunert and Sigerist, have touched several limited aspects of the problem. (35) There is no doubt that such studies are beset with great difficulties; nevertheless, a thorough systematic study would be fruitful for an understanding of mental disease in time.

Parenthetically, it is interesting and amusing to note at least one contemporary instance where an attempt was made to pin the label of mental disease on the 1848 democrats. The *Athenaeum* of March 23, 1850, carried the following note: "In Berlin, a curious subject for a thesis has been found by a student in medicine, the son of M. Groddeck, the deputy, seeking his degree. M. Groddeck has discovered a new form of epidemic, whose virus has of late circulated throughout the Continental Nations with a rapidity contrasting strongly with the solemn and stately march of cholera. Its development, indeed, has been all but simultaneous in the great European Capitals, but we know not that it has before occurred to anyone to treat it medically. M. Groddeck's thesis publicly maintained, is entitled 'De morbo democratico, nova insaniae forma' (On the democratic disease, a new form of insanity). The Faculty of Medicine, with the usual dislike of Faculties of Medicine to new discoveries, refused admission, it appears to this dissertation, but the Senate of the University, on M. Groddeck's appeal, reversed their decision." (36)

#### MADNESS AND CIVILIZATION

The element of bias is only too obvious in the designation of democratic beliefs as a form of mental disease. This is not unlike the practice of designating as mad those who do not agree with one, or who say or advocate things that seem bizarre or obscure. This judgmental aspect, while perhaps not so evident,

has also been present in the discussion of the relation between civilization and mental illness carried on for more than a century and a half. Despite such an element of bias, it has been the investigation of this problem which in a large sense has led to current studies on the epidemiology of mental disease, and the concern with social stress in the causation of such illness.

Broadly speaking mental illness emerged as a proper subject for objective medical investigation in the 18th century. As asylums were created and data collected on the patients in them, the question was raised: Is insanity on the increase? The problem derived from a number of sources. For one, there was the nature cult of the 18th century which viewed the present as a degenerate retrogression from a golden age of natural virtue. Any further development of civilization was found to increase manifestations of degeneracy. Then, this was also the period of the early Industrial Revolution with its attendant evidences of social maladjustment. The alleged increase in the incidence of insanity was viewed as another aspect of this situation, and physicians, philosophers, and others speculated on the question whether man would be able to adapt successfully to the increasing complexities of society. Current viewers with alarm and prophets of impending doom are simply the most recent in a long line. The literature on the question of mental illness and civilization is large, and it will not be possible to consider every writer on the subject. Several have been chosen for discussion to illustrate the main lines of development.

The situation in the early 19th century is well illustrated by two British authors, both of whom published works on mental illness in 1828. According to Sir Andrew Halliday, "The finer the organs of the mind have become by their greater development, or their better cultivation, if health is not made a part of the process, the more easily are they disordered. We seldom meet with insanity among the savage tribes of men; not one of our African travellers remark their having seen a single madman. Among the slaves in the West Indies it very rarely occurs; and, as we have elsewhere shown from actual returns, the con-

tented peasantry of the Welsh mountains, the western Hebrides, and the wilds of Ireland are almost free from this complaint. It is by the over-exertion of the mind, in overworking its instruments so as to weaken them, while the healthy functions of the body are, by a kind of reaction, interfered with, that insanity may be said to take place in a great number of instances; while, in others, it is the over-exertion of the bodily powers, and the derangement of the vital functions, that re-act upon the brain, and derange its operations." (37)

A different view was taken by George Burrows, who accepted the social causation of mental disease. He pointed out that "many of the causes inducing intellectual derangement, and which are called moral, have their origin not in individual passions or feelings, but in the state of society at large; and the more artificial, i.e., civilized, society is, the more do these causes multiply and extensively operate. The vices of civilization, of course, most conduce to their increase; but even the moral virtues, religion, politics, nay philosophy itself, and all the best feelings of our nature, if too enthusiastically incited, class among the causes producing intellectual disorders. The circumstances influencing their occurrence are to be sought in all the various relations of life, in constitutional propensities, and, above all, perhaps in education." (38)

Among the social causes, he also calls special attention to situations of rapid change such as revolutions. "Insanity," said Burrows, "bears always a striking relation to public events. Great political or civil revolutions in states are always productive of great enthusiasms in the people, and correspondent vicissitudes in their moral condition; and as all extremes in society are exciting causes, it will occur, that in proportion as the feelings are acted upon, so will insanity be more or less frequent." (39) In this connection he refers to Pinel, Halloran, and comments on the writings of Benjamin Rush.

Of considerable interest are his sharp remarks on the alleged absence of mental disease among uncivilized and primitive peoples. Repudiating this belief, he pointed out that the noble

savage, who "no rule but uncorrupted reason knew," was actually no more than a fiction. Furthermore, the reason why mentally ill people were not found among primitive groups was that they were destroyed without hesitation. Men everywhere, Burrows concluded, were "liable, among other ills, to insanity." But he was also aware that the evidence on many of the points which he considered was too vague to afford any conclusion.

Not quite a decade later however, statistical data were becoming available, so that W. A. F. Browne, medical superintendent of the Montrose Asylum, was able to cite them in support of his belief that insanity was on the increase due to the development of mechanical civilization. (40) "By the calculations of Sir A. Halliday," he said, "which, although perhaps merely approximations to the truth, have the merit of being the only data we possess, it appears that the proportion of the insane to the sane population of Europe, is 1 to 1,000. In Wales, the proportion is 1 to 800, in Scotland 1 to 574. The Americans, so closely allied to us by descent, language, national character, and customs, it is computed by Dr. Brigham, present 1 lunatic in every 262 inhabitants. This disparity probably depends on the rapid acquisition of wealth, and the luxurious social habits to which the good fortune of our transatlantic brethren has exposed them. With luxury, indeed, insanity appears to keep equal pace. Nay the opinion has been hazarded, that as we recede, step by step, from the simple, that is savage manners of our ancestors, and advance in industry and knowledge and happiness, this malignant persecutor strides onward, signaling every era in the social progress by an increase, a new hecatomb, of victims. . . . With civilization . . . come sudden and agitating changes and vicissitudes of fortune; vicious effeminacy of manners; complicated transactions; misdirected views of the objects of life; ambition, and hopes, and fears, which man in his primitive state does not and cannot know. But these neither constitute, nor are they necessarily connected with civilization. They are defects, obstacles which retard the advancement of that amelioration of condition towards which every discovery

in arts, or ethics, must ultimately tend. To these defects, and not to the amount of improvement, or refinement of a people is insanity to be traced." (41)

The question may be raised then, does insanity increase in consequence? To this problem, Browne addressed himself pointing out that it is one of the most interesting questions to be decided by statistics. While he believed that mental illnesses had increased, Browne admitted that "more careful examination is, without doubt required to establish the proposition." (42) Furthermore, he considered the incidence and prevalence of insanity by social class (rich—poor) and by occupation. While he inclines to the view that the wealthy and better educated groups were more likely to have more mental illness, here too he had to admit that "We do not possess sufficient data to determine the relative proportions of the insane rich and the insane poor." (43) At the same time, Browne discussed the available statistical data, especially that of Esquirol, Georget, and other French psychiatrists. He raised questions concerning the validity of the data, the manner in which they were obtained and a number of other problems which still concern those who study the incidence and prevalence of mental disease. Finally, he dealt with the relation of political systems, social commotions, and the like to insanity. Observing that it was not the form of government which caused mental illness he went on to point out that it was rather "the mode in which it is administered, the social relations, the tranquility or the fluctuations in the habits, value of property and rank, the degree of prosperity, and the moral and religious condition which arise out of it, must obviously do so. In that state, then, be it monarchical or republican, in which the sources of moral agitation and excitement are most abundant, will the proportion of insanity be the highest." (44)

While the baneful effects of civilization were generally accepted on faith or supported by statistics of dubious validity, observations were recorded which tended to contradict this view. When P. L. Panum made his observations on measles

during an epidemic in 1846, he also recorded some observations on the mental health of the population. "Since it has been proved," he wrote, "that the frequency of mental diseases is generally in direct proportion to civilization and its accompanying social collisions, it might be surmised that these diseases are extremely rare on the Faroes, inasmuch as civilization has certainly not attained a high degree there, and the social collisions so agitating to the mind, under the patriarchal conditions which prevail, are proportionately very few. But on the contrary, there is hardly any other country or indeed any metropolis, in which mental diseases are so frequent in proportion to the number of people as the Faroes." (45)

Despite such discrepant observations, however, the view persisted that insanity must be increasing because society was becoming more complex. Even where there was a clear awareness that the data necessary for a valid judgment were lacking, confirmation was sought by reasoning. Edward Jarvis, an American physician, who was very active in the reform of mental institutions as well as in related matters, wrote in 1851 that "it is impossible to demonstrate, whether lunacy is increasing, stationary, or diminishing, in proportion to the advancement of the population, for want of definite and reliable facts, to show, how many lunatics there are now, and still less to show, how many there have been at any previous period. Wanting these two facts, we cannot mathematically compare the numbers of insane or their proportions to the whole people at any two distinct periods of time, and thus determine whether lunacy increases or retrogrades." (46)

But since the facts were not available or adequate to answer the question, he turned to an examination of the causes of mental illness to see "whether the causes are more or less abundant, and act with more or less efficiency now than formerly, and are likely to produce more or less lunacy." (47) Since the causes derived from mental overexertion, insecurity, social maladjustments, and the like, Jarvis was able to support his belief. Thus, he concluded: "Insanity is then a part of the

price we pay for civilization. The causes of the one increase with the developments and results of the other. This is not necessarily the case but it is so now. The increase of knowledge, the improvements in the arts, the multiplication of comforts, the amelioration of manners, the growth of refinement, and the elevation of morals, do not of themselves disturb men's cerebral organs and create mental disorder. But with them come more opportunities and rewards for great and excessive mental action, more uncertain and hazardous employments, and consequently more disappointments, more means and provocations for sensual indulgence, more dangers of accidents and injuries, more groundless hopes, and more painful struggle to obtain that which is beyond reach, or to effect that which is impossible.

"The deductions, then, drawn from the prevalence and effects of causes, corroborate the opinion of nearly all writers, whether founded on positive and known facts, on analogy, on computations or on conjecture, that insanity is an increasing disease. In this opinion all agree." (48)

Similar views are to be found in England, Germany, and other countries. For example, John Hawkes, assistant medical officer to the Wilts County Asylum wrote in 1857: "I doubt if ever the history of the world, or the experience of past ages, could show a larger amount of insanity than that of the present day. It seems, indeed, as if the world was moving at an advanced rate of speed proportionate to its approaching end; as though, in this rapid race of time, increasing with each revolving century, a higher pressure is engendered on the minds of men and with this; there appears a tendency among all classes constantly to demand higher standards of intellectual attainment, a faster speed of intellectual travelling, greater fancies, greater forces, larger means than are commensurate with health." (49) These in turn are linked to other causes such as ill health, financial embarrassments, over-anxiety, excessive application to business and the like, causes that are not restricted to the upper classes of society. Indeed, Hawkes

stresses the need for a wider field of study which would embrace as well "the middle and the lower walks of life." (50)

This belief in the rising tide of madness is a theme that is played with numerous variations. In Germany, Wilhelm Griesinger asserted that different nations were variously predisposed to mental health. Yet, he too felt that overall mental illnesses had actually increased. Griesinger did not accept political influences as a cause of insanity, but considered them as a factor in providing the symptom content manifested by patients. But while he accepted the position that the advance of civilization had brought about an increase of insanity, he was equally a product of his time in his belief that this adverse result was balanced by progressive consequences of civilization. (51)

Ackerknecht has made the provocative suggestion that the belief in a progressive increase of insanity during the 19th century is an aspect of the belief in progress, that the belief was firmly held even when there was no firm basis in fact because the greater prevalence of mental illness was evidence of more advanced civilization, since civilization was considered a basic element in its causation. As Jarvis put it, insanity was the price paid for the high level of civilization attained by 19th century Western European culture as a consequence of the Industrial Revolution. In this sense, the problem of mental illness was no different than the contemporary problems of physical disease.

The consequences of this position were recognized by Hawkes when he proposed a preventive program for community mental health. Mental hospitals, though necessary, he pointed out, will not check the spread of mental disorders. To achieve this aim prevention is required. Just as "we appoint officers of public health," he continued, "whose business it is to hunt out fever and contagious maladies, the offspring of ignorance and neglect, and to trace them to their lair, and to strangle them at birth, . . . let us think . . . how the same principles of prevention may be applied to diseases of the mind." (52) Action toward this end must be organized on a community basis,

making use of "resources among all classes of society." The basis of a preventive program must be a social structure devoid of stresses and maladjustments, in which all classes receive their proper due, and where it is recognized that the basis of society is "formed by the stout hearts and strong arms of the mass of labouring poor." (53) The consequences which follow from these premises provide the specifics of an action program. "Let us . . . endeavor to promote mental sanitary reform," Hawkes proposed, by "combining to introduce those changes in the social condition, more especially of the working classes, by which that high pressure system, so prejudicial to the health of the mind, shall be slackened, and the strain which it occasions relaxed. Let these people have those proper periods for repose and recreation, without which man becomes a mere machine. Let the hours of labour be abridged, and let childhood no longer share the curse of the fall. Let the multitudes who have not the means or opportunities of learning from books, be instructed by public teachers the first principles of mental as well as physical hygiene." (54)

Clearly, by the middle of the 19th century the problem of mental disease, in terms of incidence, prevalence, trend, causation, prevention, and community action, had been broached, and various aspects with which we are today concerned had been examined in some respects. Many of these questions clearly could not be settled due to inadequate knowledge and techniques. Yet the theories and points of view which were put forth are still with us, are still being discussed and examined. One widely accepted theory was that mental disorder was in some way related to social instability and maladjustment. Within this broad theoretical framework, attention was focused on the element of rapid social change as an important, possibly basic causal factor. In a period of rapid industrialization, this is hardly surprising. And while the alleged increase of insanity was considered an almost inevitable concomitant, there were voices raised to question whether the price was actually necessary or worthwhile. Finally, the problem of differen-

tial social incidence and prevalence was formulated, and thought was given to ways of investigating it so as to throw light on the causation of mental disorder.

Considering whether or not insanity was on the increase, Edgar Sheppard, in 1873, wrote that "Apart from statistical evidence (which is often very untrustworthy), our inclination to one side or the other will be much coloured by the meaning which we attach to that conventional term 'civilization.' If it implies all that our optimists say it implies—the practice of all the virtues and a greater capacity for all that is good and noble—then you will be disposed to hold to the opinion that insanity *cannot* be on the increase. But there is another side to the picture. To me, . . . 'civilization' may but express wear and tear, and high pressure. And the product of these is deterioration of nerve-tissue, and general impairment of our material organizations . . . civilization is really a term singularly inexact and indefinite, and admitting of great latitude of interpretation. It involves an improvement, no doubt, of the social wheat; but there is to be considered also its inevitable correlative—a frightful multiplication of the social tares. If our schools and seminaries, and hospitals and churches have multiplied, so also have our casinos and gin-palaces, and betting-rings; the whole area of speculation is a hundred-fold enlarged; all the energies of life are multiplied and intensified; and men shriek at each other on the Stock Exchange who used to converse in quieter and less 'civilized' times." (55)

Sheppard then proceeded to discuss the problem of differential prevalence. "There has been a great difference of opinion," he wrote, "as to whether insanity is more frequent in the male or in the female, and the large aggregation of women in our different asylums has led to a belief that they are more obnoxious to mental alienation than ourselves. But a source of fallacy is obvious; *existing* cases do not represent *occurring* cases. Women do not die, and do not recover as we do; hence they accumulate. It is pretty certain that the *occurring* cases in the two sexes are about equal; perhaps an excess slightly

obtains in the males. Insanity occurs more frequently between the ages of 30 and 40 than any other decade. It is more frequent in the summer than in the winter months, and among the agricultural than the town populations. Regarded superficially the latter circumstance is somewhat puzzling, and in contradiction to what one would naturally expect. The vices and wear and tear of great cities, with all the attendant evils of dense gregariousness, would seem to invite disease in a larger ratio than in the country." (56) Furthermore, he pointed out, the agricultural population was worse fed than the urban inhabitants, their occupation did not provide adequate intellectual stimulation, and that the children were starved and stunted. Consequently, they tended to suffer from dementia and imbecility. Here was a clear hint that an approach to a possible understanding of the relation of social factors to mental disorders would be to consider the distributions of various mental illnesses in time and space, and to see how they were connected with the characteristics of various population groups.

Studies of this kind began to make their appearance toward the end of the 19th century in the United States and in England. The transitional character of these analyses is evident in the review, in 1887, by Judson B. Andrews of the distribution of the insane in the United States. "In the northern belt," he said, "the New England states take the lead with one insane person to every 359 of the inhabitants. This decreases till we reach the newer States and Territories, with one insane person to every 1,263 inhabitants. . . . These figures emphasize the statement that the pioneers of our newer settlements are the more hardy and vigorous citizens, and that the feeble and dependent are left in their former homes, to enjoy the comforts of the hospitals and asylums, which are the special growth of the older civilization." In this connection he also discussed the occurrence of mental disease among Negroes. "In the negro race," he said, "the proportionate increase of insanity is far greater than in any other division of the population. From

1870 to 1880 there was an increase in the census of the colored race of 34.85 per cent, while for the same period there was an increase of 285 per cent of the insane. This large multiplication has occurred since emancipation from slavery and the consequent changes in conditions and life. The causes are briefly told: enlarged freedom, too often ending in license; excessive use of stimulants; excitement of the emotions, already unduly developed; the unaccustomed strife for means of subsistence; educational strain and poverty. The total census of the other colored races is 172,000, with 105 insane, or one insane person to every 1,638. The small percentage of insane among the aborigines and Chinese is fully in accord with the observations of writers upon the causes productive of mental disease. There is much less of the refinement of civilization; less competition and struggle for place, power or wealth, and as a consequence, less tendency to mental deterioration." (57)

Andrews' discussion contains in essence the elements of the ecological study of mental disorder, which in our own time has been and is being vigorously pursued. His theory of a gradient from the frontier to the older settlements is derived from studies carried out by A. O. Wright in 1881 in Wisconsin. Presenting the results to the National Conference of Charities and Correction in 1884, Wright had said "Having made a census of the insane under public care in Wisconsin, the writer, on reducing the number by counties to the ratio to the population of the several counties, was astonished to find here a general law: That the older settled counties had the largest ratio of insane to the population, and that the ratio steadily decreased and reached the smallest ratio in the pioneer counties on the north. This seemed to show that a new country has a smaller proportion of insanity than an old country." (58) Wright believed that this law is due to the circumstance that new settlements are made by a selected population, mostly young and middle-aged people sound in mind and body. However, in the second generation, all the varied and complex causes that produce mental disorders are at work. At the same time, he also

said: "It is often claimed that insanity is a disease of civilization, and that it is increasing because civilization is increasing. This I think to be a mistake." (59)

The differential approach to the study of mental illness was carried further in the 20th century along the lines previously indicated. In 1902, Daniel G. Brinton, professor of American archaeology and linguistics at the University of Pennsylvania, in a study of ethnic psychology, differentiated certain mental disorders as characteristic of the lowest stages of culture, while others belonged to civilized groups. "It is a popular error in scientific circles that diseases of the nervous system increase with civilization," he wrote. "The opposite is true. The lowest stages of culture are far more pathological than the higher, in this, as well as in most respects. True that certain neuroses belong to cultured peoples; but morbid emotional states are especially prevalent in lower conditions." (60) On the other hand, "Diseases of nervous and mental exhaustion belong exclusively among nations of advanced culture." (61)

Basing himself upon the studies of Wright, William A. White, in 1903, contended that "insanity increases in proportion as the stresses incident to the struggle for existence become mental stresses. . . ." (62) He illustrated this view by the statistics obtained from the newly-settled American states. As the crucial point he cited the mining states of the West, such as California, where the prevalence of mental diseases was higher. In this connection, it is worth noting a study of insanity and suicide published by Pilgrim in 1906. This author found that, for the years 1900-04 the suicide rate in 50 large American cities varied from 16 to 20 per 100,000. During the same period, in San Francisco suicides occurred at the rate of 50 to 72 per 100,000. San Francisco at that time differed from other cities through its excess of males, its high percentage of foreign-born, and its general social character which was still close to the frontier. (63).

During this period, a number of studies with similar approaches appeared in Great Britain. Among these may be

mentioned those by J. F. Sutherland (1901), W. R. MacDermott (1908), and W. R. Dawson (1911). (64) Illustrative is MacDermott's article. He raised the pertinent question whether the variation in rates in different districts of Ireland does not undermine the commonly held opinion that insanity is inherited. He compared the rates for districts of Ireland in which the same families had resided for several generations. Thus he had a constant population factor, and was able to turn attention to other elements in the situation.

Contemporaneously, in Germany, Hellpach endeavored to link social class with certain forms of mental illness. (65) He differentiated the psyche of the proletariat and the bourgeoisie, and endeavored to show what forms of mental illness were to be observed in each social class. Thus, he considered certain neuroses as characteristic of the middle class and attributed them to changes in middle class culture. Hellpach laid special emphasis on materialism as a value which led to degenerative consequences, as well as on the insecurity in the bourgeoisie which derived from the militancy of the proletariat. One must recall that this was a period (1906) when the German Social Democratic Party had almost reached the apogee of its power, and even dreamed of achieving power on an elective basis. Again, it is evident how non-scientific elements intertwine with scientific problems. Yet, at the same time, such a study points to an aspect of the problem of stress and mental illness which apparently has not received as much attention as it deserves.

#### CONCLUSION

This brings us to a summation of the subject which has been presented in a broad overview. From the 18th century to the present there has existed the concept that social stress is in some way related to the causation of mental illness. The whole problem of civilization and insanity revolves around this concept. It is also clear that approaches to the elucidation of the problem have been colored by various non-scientific views and considerations. In short the analysis of this problem must be

considered in terms of the sociology of knowledge as well as an aspect of history of psychiatry. Furthermore, let us remember that this applies as well to current work in this area. At the same time, within this social context there has gradually emerged a more sharply focused approach based on the ability to distinguish and to define apparently relevant variables. For example, it is certainly true that in broad outline cultures vary widely in their responses to such stressful conditions as epidemics, wars, technological and economic upheavals, and psychological deprivations. Whatever ways men use to defend themselves against stress will in general reflect the answers favored by their culture to certain human problems. (66) Cultural influences on physiology can be demonstrated in several ways e.g. variations in nutrition and body manipulation, through attitudes toward injury and disease, and through the effects produced in the internal milieu of the organism by stress applied to it through cultural channels. Fischer and Agnew have suggested the concept of a hierarchy of stresses, and this may be illustrated by Groen's work with Jewish patients with ulcers before, during and after World War II. The patients lost their symptoms in concentration camps where the new stresses were objectively far greater, but had them back after their release and return to their more normal life. (67) What this means is that the development of further research requires the linking of epidemiological studies with studies of the physiological and psychological relations of the variables isolated by the former. Studies on one level are not enough. Research is needed on several levels and along various axes including that of time. The historian may be able to contribute perhaps in a small way by clarifying some of the contemporary issues in terms of their background and by suggestion of certain linkages that may not otherwise be apparent.

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## SOME PROBLEMS IN THE COLLECTION AND ANALYSIS OF MORBIDITY DATA OBTAINED FROM SAMPLE SURVEYS

ANN CARTWRIGHT<sup>1</sup>

THIS is a discussion of problems considered in formulating questions to elicit information about ill-health. The biases of different methods are considered and a method of analyzing the data collected in an inquiry utilizing a particular set of questions is described. A comparison is made between the results obtained in this inquiry and those from the Survey of Sickness (1), and the probable effects of the two different methods on the results are discussed.

### SCOPE OF THIS SAMPLE SURVEY

This survey was part of a larger research program that was undertaken by the Public Health Department of the London School of Hygiene and Tropical Medicine. The broad aim of the whole project was to study people's use of the different parts of the National Health Service. The study was carried out in a relatively small area so that material could be collected from several sources about the different aspects of the problem. The area chosen was a post-war housing estate just outside London. The estate had a population of about seventeen thousand. As in many other new housing estates, the population was relatively young with a high proportion of children and few elderly people (2).

A family morbidity survey was designed as part of this research project. Its aims were to supplement information obtained from various records, and also to present a picture of the problems of ill-health and the success of the health services in solving these problems, as seen from the viewpoint of the individuals and families concerned. The sample for this study was composed of the families and individuals living in a

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randomly selected three-sixteenths of the dwellings on the estate. We aimed at interviewing, personally, all the adults<sup>2</sup> in this sample of dwellings on two occasions (3), at an interval of four weeks.

In addition, mothers of school and pre-school children were to be interviewed about their children on two other occasions, also at an interval of four weeks.

The morbidity survey was conducted during the period from May, 1954 to February, 1955.

#### AIMS AND DIFFICULTIES IN FORMULATING THE QUESTIONS

At the first interview we wanted information about people's health at that point in time. We thought of this as including not only illnesses which were present at the time, but also recurrent conditions to which people believed they were subject. For each of these conditions, we wanted to know such things as when it first started, whether it caused much pain or discomfort, what treatment and advice had been received for it, and whether the individual was satisfied with the treatment received. At the second interview we concentrated on events that had occurred between the two interviews: new illnesses, and incapacities and also the consultations, and any medicines which had been taken during that time. The various consultations and medicines were related to particular illnesses by asking what illnesses they were for, and any condition disclosed at this stage that had not been reported previously was recorded.

At the first interview, however, we were anxious to avoid formulating any criteria of illness based on incapacity, or consultation, or medication in asking about people's health at that time. We wanted to obtain an index of morbidity that did not depend on people's use of the health services or on whether they had spent time in bed or stayed away from work.

It is perhaps worth expanding this point so that we can consider the advantages and disadvantages of the methods we ac-

<sup>2</sup> This we defined simply as people aged 15 or more who had left school.

tually used against those of other possible methods. If, for example, we had asked only about illnesses for which a general practitioner had been consulted, that measure of morbidity would have been open to the objection that some people will consult a doctor about an illness for which other people would not. Whether or not a person consults his doctor about a particular complaint will depend on such things as his estimate of what the doctor can do for his illness, his fear of what he may be told, his dislike of treatment, his need of a certificate, his past experience of general practitioners, his relationship with his present physician, the time he has to wait in the surgery, his estimate of the severity of possible consequences of his illness, his tolerance of pain or discomfort, etc. All these factors mean that the amount of use made of general practitioners may not be directly related to the existence of morbid conditions.

Again, if we had taken as our criteria certain degrees of incapacity, staying in bed or stopping away from work or school or not going out of doors, this would mean in effect very different things for the housewife with young children, the elderly retired man living on his own, the adolescent girl in her first job, and so on.

In addition, if we had taken either of these criteria—consultation with a doctor or a certain degree of incapacity, we would not have been told about a number of conditions in which we were, in fact, interested. We wanted to compare the varicose veins for which people consult the doctor with those they do not, and we wanted to compare the people who acted in these different ways.

Once we rejected these various objective criteria for defining an illness we were confronted with other problems and difficulties. Whether a person reports an illness to an interviewer will be influenced by such things as his impression of the purpose of the inquiry, his relationship with the interviewer, his attitude toward ill-health, his ability to express his opinions, and of course, on the actual questions asked.

Our aims in formulating the questions to be asked at the first interview in order to elicit illnesses were, then, first of all to indicate the level of ill-health in which *we* were interested, and, thus, to minimize, we hoped, the effects of people's different ideas and expectations about health and disease on the way in which they reported illnesses here, then to stimulate people to think about their own health in these terms, and finally to overcome some of the difficulties which people experience in expressing their ideas about illness.

In attempting to do this we decided to ask first about chronic illnesses and complaints to which the person had been subject at some time during the preceding twelve months. Secondly, we asked about physical disabilities. (We asked about these specifically because we felt that people with such conditions might not regard them as an illness and would otherwise not have mentioned them.) After that we asked about other illnesses, injuries, or minor complaints which were present at the time. Finally, we read out a list of forty or forty-one conditions and asked if they had any of these at the time or if they were subject to them. We varied the order in which these conditions were presented in four different ways, alphabetically, then top to bottom and ends to middle, so that the first order was 1, 2 . . . 40; the second order was 40, 39 . . . 1; the third was 20, 19 . . . 1, 40, 39 . . . 21; and the fourth order was 21, 22 . . . 40, 1, 2 . . . 20.

The conditions listed were: backache, breathlessness, catarrh, colds, constipation, coughing, depression, diarrhoea, dizziness, eyestrain or other eye trouble, faintness, fever, fits, headaches, indigestion, kidney trouble or trouble passing water, loss of appetite, loss of weight, nerves, night sweats, painful or swollen joints, pains in the chest, palpitations or thumping heart, paralysis or weakness in any limb or other part of the body, piles, rashes or itches, rheumatism, running ears or earache, running sores or ulcers, sleeplessness, stomach pains, swelling of the ankles, swelling or lump in any part of the body, trouble with teeth or gums, undue irritability, undue tiredness, unusual

bleeding from any part of the body, varicose veins, vomiting, weak or painful feet and for women, women's complaints. This list provides a fairly clear indication of the level of ill-health in which we were interested. It is also fairly comprehensive in that most symptoms come under one of the items and there are not very many morbid conditions which are not generally associated with one or more of these items. Such symptoms as headaches, indigestion, or undue tiredness might be regarded by some people as relatively minor, but apart from the fact that we wanted information about such things, there is also the problem that if we had not asked about such things specifically, some people would have reported them and others, who also had them, would not. We would have obtained an index of "willingness to talk about illness" rather than an index of morbidity. However, by asking directly about certain selected diseases and symptoms, we have created other difficulties, principally a bias towards reporting those particular conditions.

It seems relevant here to discuss what other methods we could have used to stimulate people to think about their ill-health.

One of the possibilities was to list, not diseases or symptoms but different parts of the body. This was done to a certain extent on the Survey of Sickness (1). People were asked "Have you anything wrong in the way of colds, catarrh, or nose or throat troubles or anything wrong with your eyes, ears, teeth, headpains, chest, heart, stomach or indigestion, liver, kidneys, bowels or constipation, legs, feet, hands, arms or rheumatism, skin complaints, infectious diseases or anything wrong with your nerves?" Women were also asked whether they had anything wrong in the way of women's complaints. So many actual conditions were introduced that the avoidance of bias by not asking about particular conditions was lost, and this was the main advantage of the method, from our point of view. It seems likely that if a "pure" list of parts of the body were to be tried out, it would be found that people do not think in

those terms. A cold is not something wrong with their nose or throat but a cold.

The way people think about their illnesses was the reason for discarding another suggested solution to this problem—that we should ask only about symptoms not about specific diseases. This had the attraction that symptoms such as pains, lumps, itches, etc., are things that an individual should be able to report reliably, whereas when it comes to reporting say rheumatism the informant is making a diagnosis which may or may not be justified. But here again we found that the neat theoretical solution did not work out in practice. When asked whether they had or were subject to painful or swollen joints, some of the people who said “no” later reported rheumatism, and, when asked how this affected them, said “my knee is swollen” or “my wrist is painful.” Now it may be that they did not understand what a joint is, but it may also be that once a complaint has been diagnosed and labelled medically it ceases to be thought of as a symptom. People fail to recognize their rheumatism in a question about swollen and painful joints.

#### THE CLASSIFICATION OF SELF-REPORTED ILLNESSES

One of our main interests was in the actions people had taken or not taken about their various complaints, and, to some extent, this would depend on whether they felt the various conditions they had reported were related. What people do about a cough that is associated with bronchitis is likely to be rather different from the action they take about a cough which is not associated with any other symptoms and is attributed to smoking. In addition it might often be unrealistic to ask about the action taken for each component of a composite condition. Therefore, we decided that our unit of illness would be any group of conditions which the informant regarded as being related. So, when the informant reported a second or subsequent condition, the interviewer asked whether it was connected with anything mentioned before, and if the informant thought it was, it was recorded as being part and parcel of that illness.

In addition, for each reported condition the informant was asked first "how does it affect you?", and any symptoms mentioned here were recorded as part of that illness. Then he was asked, "what do you think is the cause?", and occasionally, when the initial response had been to a symptom on the check list, an informant mentioned at this time what might be called a major disease.

Some examples of conditions which informants associated together and which we therefore treated as a single illness were:

- (a) Undue tiredness associated with headaches which made the person irritable and was attributed to the journey to work.
- (b) Coughing causing breathlessness and attributed to asthma.
- (c) Piles associated with constipation and said to be causing stomach ache and attributed to having children.
- (d) Weak and painful feet associated with rheumatism which also caused backache and was attributed to living in a damp house.

From this type of information, we coded three things for each illness:

1. *The Main Diagnosis.* This could have been reported initially as a condition or as an associated symptom or as a cause, but each illness could have only one diagnosis, and the selection of the appropriate one was based on a system of priorities which is described below. A modified version of the International Statistical Classification of Diseases and Injuries and Causes of Death was used.

2. *Certain Associated Symptoms or Conditions.* These were the 41 items on our check list, and as many of these as were mentioned were coded here. (We multi-coded 4 columns of a Power-Samas card.)

3. *The Cause,* for which a code was devised from the answers given. It covered 21 different things, including the weather, the war, work, and childbearing, and one code indicated when the reported cause had in fact been coded as the main diagnosis.

## METHOD OF SELECTING THE MAIN DIAGNOSIS

Where a single condition was reported, the problem was straightforward. Where two or more conditions were related, and were therefore regarded as a single illness, the system of priorities adopted for selecting the main diagnosis was as follows:

1. If only one condition was classifiable under disease groups 1-15 or 17 in the International Classification the others falling in group 16, symptoms and ill-defined conditions, the defined condition was taken as the main diagnosis.

2. Where two conditions were associated and both fell in groups 1-15 or 17 the criteria as to which should be taken as the main diagnosis were:

a. If one condition was included in our check list and the other was not then the condition not on the check list was taken as the main diagnosis. In this way both conditions were included in the description of the condition, one as the main diagnosis and the other as an associated condition.

b. If one condition, in the general consensus of medical opinion, could be considered as causing the other or as being more severe than the other, then it was taken as the main diagnosis. Examples of this were:

<i>Associated Conditions</i>	<i>Main Diagnosis</i>
Bunions and Corns	Bunions
Blood Pressure and Menopause	Menopause
Overweight and Thyroid	Thyroid
Conjunctivitis and Hayfever	Hayfever

c. If neither 1 nor 2 applied then the condition which appears first in the International Classification list was coded as the main diagnosis.

3. Where an illness consisted of two or more conditions all of which fell in the group of "symptoms and ill-defined conditions" we used an order of priority which corresponded in general to the order of the International list.

SOME METHODOLOGICAL IMPLICATIONS OF THE RESULTS

With these questions, and this definition of an illness, an average of 2.9 illnesses per person was reported by adults at the first interview of the survey. Nearly three-quarters of these illnesses were elicited only after the question listing 40 or 41 symptoms or diseases. (Table 1.) Nearly half of the illnesses which were reported at this question were recurrent but not present at the time of interview. They tended to be chronic illnesses, in that 55 per cent first occurred over

Table 1. Certain characteristics of illnesses reported by adults at different questions at the first interview.

	Q1. CHRONIC ILLNESSES AND RECURRENT COMPLAINTS	Q2. PHYSICAL DISABILITIES	Q3. OTHER ILLNESSES INJURIES MINOR COMPLAINTS PRESENT AT TIME	Q4. CHECK LIST OF 40 OR 41 ITEMS	REPORTED LATER AT INTERVIEW OR NOT KNOWN WHEN REPORTED	ALL ILLNESSES
	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
<i>Nature</i>						
Continuous	48	87	61	36	35	41
Recurrent, Present	16	3	32	14	14	14
Recurrent, Not Present	34	5	5	48	39	42
Don't Know, No Answer	2	5	2	2	12	3
<i>When First Had It</i>						
All Life	4	12	2	5	9	5
20 Years Ago or More	16	30	8	15	9	15
10 Years Less Than 20 Years	20	26	5	17	9	18
5 Years Less Than 10 Years	17	15	7	18	9	17
1 Year Less Than 5 Years	27	8	11	29	25	27
6 Months Less Than 1 Year	6	1	2	7	10	7
1 Month Less Than 6 Months	7	—	7	5	9	5
Less Than 1 Month	2	1	56	3	4	4
Don't Know, No Answer	1	7	2	1	16	2
<i>Pain or Discomfort</i>						
A Lot	51	20	34	25	22	30
A Little	34	24	53	46	38	43
None	12	42	11	27	23	24
Don't Know, No Answer	3	14	2	2	17	3
<i>General Practitioner Consulted</i>						
Yes	83	51	36	46	48	53
No	15	29	62	52	35	44
Don't Know, No Answer	2	20	2	2	17	3
Number of Illnesses (100 Per Cent)	858	137	130	3,102	102	4,329

five years before the interview, and only 15 per cent in the previous year and 3 per cent in the previous month. It should be remembered however that all these had been present at some time during the previous year. A quarter of them were said to cause a lot of pain or discomfort and a general practitioner had been consulted about nearly half of the conditions reported at this stage of the interview.

Each illness was associated with an average of 1.6 conditions on the check list and adults reported an average of 4.7 of these check list conditions per person. Examples of the effect of associating conditions together in this way are given in Table 2 which shows the proportion of various conditions on the check list which were (a) reported and (b) classified as the main diagnosis.

Two-thirds or more of the reported cases of breathlessness, cough, sleeplessness, and backache were associated with other more serious conditions, in that the other condition became the

Table 2. Proportion of various conditions on the check list which were coded as the main diagnosis and the most frequent diagnoses in other cases.

	PER CENT OF ADULTS REPORTING THIS CONDITION	PER CENT OF REPORTS OF THIS CONDITION CODED AS MAIN DIAGNOSIS	MOST FREQUENT DIAGNOSES IN OTHER CASES
Nerves	22	67	Mental, Psychoneurotic & Personality Disorders, Menopause, Skin Conditions
Varicose Veins	14	92	Obesity
Piles	7	95	Complications of Pregnancy, Puerperium
Colds	22	72	Bronchitis, Sore Throat, Tonsillitis, Hay Fever
Catarrh	26	53	Colds, Bronchitis, Deafness, Sinus
Cough	20	33	Colds, Bronchitis, Catarrh, Tuberculosis, Asthma
Diseases of Teeth	12	93	—
Constipation	13	69	Piles, Ulcer of Stomach or Duodenum
Rheumatism	24	80	Arthritis, Neuritis, Heart Trouble
Headaches	31	47	Nerves, Menstruation, Menopause, Colds, Catarrh
Sleeplessness	12	31	Nerves, Menopause
Breathlessness	19	27	Heart Trouble, Tuberculosis, Bronchitis, Asthma, Obesity, Menopause
Backache	23	32	Rheumatism, Menstruation, Kidney Trouble
Indigestion	17	65	Ulcer of Stomach or Duodenum, Nerves, Constipation

main diagnosis under our system. The most frequent diagnoses when the condition on the check list was not taken as the main diagnosis is shown in the final column of the table. This illustrates our system of priorities. If a cold was associated with bronchitis, tonsillitis or hay fever, one in the latter group became the main diagnosis but if it was related to catarrh or cough then the main diagnosis was a cold. Similarly piles were subordinated to complications of pregnancy or the puerperium but became the main diagnosis when only associated with constipation.

In 5 per cent of the illnesses, the main diagnosis as coded had been reported initially as the cause of associated conditions. In this group the most frequent diagnoses were the menopause, disorders of menstruation, obesity or overweight, complications of pregnancy and blood pressure.

#### COMPARISON WITH THE SURVEY OF SICKNESS

The illness rates obtained on our inquiry appear relatively high and it therefore seemed worth while to make a comparison with another somewhat similar survey in an attempt to see how far this higher rate can be explained by the different methods used.

The Survey of Sickness was carried out from 1943-1952 and during this period monthly samples of adults in England and Wales were questioned about their health in recent months.<sup>3</sup> We can thus compare the number of illnesses reported as being present during a particular month in this Survey with the number of illnesses present during the four weekly periods in our Family Health Survey. Our figures are based on information supplied by adults who were interviewed twice and include all illnesses reported at the second interview as well as those illnesses which were reported at the first interview and said to have been present at any time between the first and second interviews.

<sup>3</sup>Up to 1951 the sample was drawn from the National Register and included adults aged 16 years and over. The size of the monthly sample varied from 2,500 to 4,000. A multi-stage sample was used, the details of which are given in Reference 1.

The main differences in the methods of the two inquiries are set out in Table 3, and the illness rates for different age and sex groups in each survey in Table 4.

The illness rates on the present inquiry were greater than those on the Survey of Sickness for all age and sex groups, even though on the latter inquiry all conditions and symptoms are said to have been treated as separate illnesses. How far this happened in practice may perhaps be questioned. Interviewers are more likely to do the practical and apparently reasonable thing than to obey instructions from Headquarters implicitly especially if they regard these as being rather theoretical and divorced from reality, and especially also if they

Table 3. Summary of main differences in method between Survey of Sickness and this inquiry.

	SURVEY OF SICKNESS	PRESENT INQUIRY
Period Studied	People Were Interviewed during the First Fortnight of a Month, and Questioned about their Sickness during the Previous Two Calendar Months.	People Interviewed and Asked about Illnesses Present at Time and Conditions to which They Were Subject.  People Re-interviewed 4 Weeks Later and Asked about Illnesses Reported at First Interview and Other Illnesses Occurring during Four Weeks.
Questions Asked	Check Questions Asked about Colds, Catarrh, Nose or Throat Trouble, Eyes, Ears, Teeth, Head, Pains, Chest, Heart, Stomach or Indigestion, Liver, Kidneys, Bowels or Constipation, Legs, Feet, Hands, Arms, or Rheumatism, Skin Complaints, Infectious Diseases, Nerves, Women's Complaints.	40 or 41 Specific Diseases or Symptoms Listed at First Interview. At Second Interview People Were Asked about Illnesses, Consultations, Incapacity and Medicines Taken since Previous Interview, and about the Illness to which Any Incapacity, Consultation, Medicine Was Related.
Unit Coded and Analysed	All Conditions and Symptoms Mentioned Were Treated as Separate Illnesses.*	People Asked if Conditions They Reported Were Related, and Connected Conditions Were Treated as a Single Illness.
Person Interviewed	Proxies Allowed after Three Calls. No Figures Available of Numbers Involved.	Proxies Only Accepted if Otherwise No Information Would Have Been Obtained for that Individual. 93 per cent of Adults Interviewed Personally.
Type of Sample	Individuals Aged 16 and Over on The National Register.	All Adults (People Who Had Left School) in a Sample of Dwellings.

\* Registrar General's Statistical Review of England and Wales for 1950-51.

	1950 SURVEY OF SICKNESS MONTHLY PREVALENCE RATES (SPELLS) PER INDIVIDUAL INTERVIEWED	PRESENT INQUIRY AVERAGE NUMBER OF ILLNESS PRESENT DURING FOUR WEEKS PERIOD	RATIO PRESENT INQUIRY RATE SURVEY OF SICKNESS RATE
<i>Males</i>			
16-44	1.00	2.22	2.2
45-64	1.32	2.63	2.0
65 and Over	1.79	3.47	1.9
<i>Females</i>			
16-44	1.38	2.88	2.1
45-64	1.82	3.39	1.9
65 and Over	2.30	3.83	1.7
Males 16 and Over	1.20	2.35	2.0
Females 16 and Over	1.66	3.01	1.8

Table 4. Comparison of illness rates on Survey of Sickness and on present inquiry.

involve extra work. The temptation to regard running noses, catarrh, and coughs as all part of a cold and not to record them as separate conditions must be very great and in many ways eminently reasonable.

The difference in rates was greater for males than for females, and for the youngest age group, 16-44 than for the other age groups. These differences in the *ratios* for the age and sex groups may be due to a greater number of "proxy" interviews on the Survey of Sickness, but the substantial difference between the rates in the two inquiries remains to be explained.

It is possible to make only rather limited comparisons of the diseases reported on the two studies because of the groups which have been used, but some comparisons of the frequency with which various diagnoses were recorded are given in Table 5. The condition showing the greatest difference, with the excess in our survey was tuberculosis and this probably can be explained in terms of the actual incidence of the disease. The area in which our inquiry was carried out was a post-war housing estate and since people with tuberculosis were given

priority on the housing list, this estate initially contained an unduly high proportion of people with this complaint.

The other conditions with an excess approaching this magnitude were disorders of menstruation and menopausal symptoms. Here part of the explanation for the difference may be that in a third of our cases, these conditions were only mentioned when we asked about the cause of some related symptoms. Another part of the explanation of the different frequency with which disorders of menstruation were reported may be in the age distribution of our adult population which contained a relatively high proportion of adults under 45. Other conditions with a marked excess for the present inquiry were varicose veins and piles each of which was mentioned specifically on this study but not on the Survey of Sickness.

Three conditions, diseases of the teeth, constipation, and

Table 5. Comparison of certain disease rates on Survey of Sickness and present inquiry.

	RATE PER 1,000 INDIVIDUALS				RATIO Present Inquiry Survey of Sickness	
	Survey of Sickness		Present Inquiry*		Males	Females
	Males	Females	Males	Females		
Rheumatism	116	195	110	157	0.9	0.8
Bronchitis	43	38	48	47	1.1	1.2
Arthritis	13	28	15	26	1.2	0.9
Ulcers of Stomach	7	3	} 21	} 8	} 1.2	} 1.6
Ulcers of Duodenum	10	2				
Nerves	54	148	74	139	1.4	0.9
Mental, Psychoneurosis and Personality Dis- orders	11	16	15	21	1.4	1.3
Asthma	8	9	12	16	1.5	1.8
Colds	126	120	185	185	1.5	1.5
Constipation	26	71	61	125	2.3	1.8
Headaches	65	146	168	232	2.6	1.6
Diseases of Teeth	50	52	110	143	2.2	2.8
Varicose Veins	14	37	82	155	5.9	4.2
Piles	7	7	46	49	6.6	7.0
Menopausal Symptoms		} 27		56		} 6.5
Disorders of Menstruation				120		
Tuberculosis—All Forms	4	3	31	34	7.8	11.3

\* These figures are not comparable to those in Table 2 as these are based on illnesses present during a particular four week period while those in Table 2 refer to all illnesses reported at the first interview.

headaches, were recorded as diagnoses about twice as frequently on our study as on the Survey of Sickness although they were mentioned specifically in the questions on both inquiries. Over a third of our cases of constipation were reported because we asked about medicines taken during the period between the two interviews, and a number of people had taken laxatives for constipation but they had not previously reported constipation as an illness. Similarly, 30 per cent of the headaches were reported because of the aspirins which had been taken for them during the period. These factors only account for some of the discrepancy between the rates on the two inquiries. There is other evidence that incidence of these three conditions, diseases of the teeth, constipation, and headaches, is particularly high on the estate where our inquiry was carried out. An analysis of the General Practitioner's records shows that in each case the rates are 2, 3 or 4 times as high as the average rates on other studies of General Practitioner's records.

Finally, the rates on the two inquiries for nerves, colds and rheumatism did not show a very great difference and each was mentioned specifically on both studies. The other conditions showing relatively little difference, bronchitis, asthma, ulcers of the stomach or duodenum, and mental psychoneurosis, and personality disorders are all fairly major complaints.

These comparisons suggest that differences in method make it difficult to reach any definite conclusions about the relative morbidity in the two populations.

#### SUMMARY

Various objective criteria for defining an illness and the reasons for not using them in this inquiry have been discussed. In the questions finally adopted a list of 40 or 41 separate conditions was included. In the analysis of the results these specified conditions were incorporated into the description of illnesses and the unit of illness was the group of diseases and/or symptoms which informants regarded as being related.

Some comparisons with the Survey of Sickness illustrate the different ways in which the questions asked and the method

of analysis can influence the nature of morbidity data collected on this type of inquiry.

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# A DEMOGRAPHIC ASPECT OF INTERSTATE VARIATIONS IN AMERICAN FERTILITY, 1800-1860

H. YUAN T' IEN<sup>1</sup>

THE lack of extensive and systematic information about early 19th century American fertility precludes a clear understanding of many aspects of its movement, particularly when the measurement of fertility for those years is the number of children under 5 per 1,000 women of childbearing age. This fertility ratio is known to be affected by various demographic factors such as the age distribution of females in the reproductive period, mortality of children under 5 (and their under-enumeration), migration, proportion of females who are married, etc.

The fertility ratio is therefore not without many unavoidable pitfalls when used as a measure of true fertility and/or its modifications in the early years of the 19th century. In the 1810's and 1820's, for example, the textile industry in New England began to attract females from rural areas to its factories. Aside from other possible factors, this internal migration of females, single and married, must have somewhat distorted fertility ratios for different regions or states.<sup>2</sup>

However, the usefulness of the fertility ratio is still substantial when the limited data render difficult the employment of other means of arriving at some approximation of fertility in the early decades of the last century. Measured in terms of fertility ratios, the decline of, and regional differences in, fertility in the United States were shown to date from the beginning of the 19th century.<sup>3</sup> The complexity of the causes of the

<sup>1</sup> From the Department of Demography, The Australian National University.

<sup>2</sup> Cf. Kemp, L.: A Note on the Use of the Fertility Ratio in the Study of Rural-Urban Differences in Fertility, *Rural Sociology*, 1945, 10, No. 3, pp. 312-13.

<sup>3</sup> Willcox, W. F.: The Change in the Proportion of Children in the United States and in the Birth Rate in France During the Nineteenth Century. *Publications of the American Statistical Association*, March, 1911, 12, No. 93, pp. 490-99.

(Continued on page 50)

reduction in fertility requires little elaboration; but, in the few studies cited, the keynote of their interpretation of early American fertility phenomena was the importance of industrialization and urbanization. It was maintained that "since 1800 industrialization has cut down the rate of natural increase."<sup>4</sup> And, "... Beginning in southern New England, shortly after the opening of the nineteenth century, the decline in fertility proceeded westward into the Middle Atlantic States with the development of industry and the growth of cities. By 1820 the ratio of children to women in the frontier States from Ohio to Mississippi, where agriculture was dominant, was nearly twice that in southern New England."<sup>5</sup> It was also reported that fertility differentials by urban-rural division and according to "plane of living" were of considerable magnitude in the United States at the beginning of the 19th century.<sup>6</sup>

But, the aim of the present paper is not to discuss the general validity of the thesis that industrialization and urbanization, and what these two terms imply, are the chief forces reducing fertility in the modern era. Rather, the present attempt touches upon an aspect of interstate variations in American fertility which has been overlooked up to the present. It views early American fertility from a different perspective and proposes to indicate other possible factors (not in socio-economic terms) accountable for some of these fertility phenomena.

#### ASSUMPTIONS AND HYPOTHESIS

As the United States in the early decades of the 19th century was still a "newly settled" country, at least in a demographic sense, it is improbable, in the author's opinion, that its fertility could have been affected so much and so early by industrialization and urbanization. Especially, the decline in

Whelpton, P. K.: Industrial Development and Population Growth. *Social Forces*, March 1928 6, 3, pp. 458-67.

Jaffe, A. J.: Differential Fertility in the White Population in Early America, *Journal of Heredity*, Sept. 1940. 31, No. 9, pp. 407-11.

<sup>4</sup> Whelpton, *op. cit.*, p. 467.

<sup>5</sup> THE PROBLEMS OF A CHANGING POPULATION. National Resources Committee, May 1938, p. 123.

<sup>6</sup> Jaffe, *op. cit.*

fertility in most of the Western European countries, where populations were then more stable and industrialization and urbanization more advanced, apparently did not commence until after the 1870's.<sup>7</sup> (France and Ireland excepted.)

Indicative of the fact that the United States was a demographically new country in the early 19th century were the shifts in its state sex ratios in those years. It has been observed that "the proportion of males in the white population shows a more marked decrease from 1790 to 1900 in the Middle and Southern states than New England."<sup>8</sup> In view of the shifts in the sex ratios, it seems reasonable to assume that some demographic factors, heretofore undetected and particularly likely to be influential in a relatively new population, could have produced certain fertility patterns in the United States.

Ideally, of course, the present attempt should relate fertility to such demographic factors as age at first marriage, proportion of those ever married, etc. The absence of such marital data, however, necessitates an indirect inquiry into the matter, and the indirect way of resolving the problem seems to be that of relating fertility ratios to sex ratios.

Whether or not the sex ratio was causally related to fertility in the 19th century can only be surmised. It seems an appropriate conjecture that the relatively high fertility in many parts of the United States in those years could have been due in part to the scarcity of females. A great majority of females in the areas of high sex ratios were likely to be married and contribute substantially to reproduction as measured by the fertility ratio. In areas where the number of females exceeded the number of males, not all of the females could be married in a monogamous society. The fertility ratios for such places would therefore be lower because a larger proportion of unmarried females were included.

Thus the analysis which follows is based on the postulate

<sup>7</sup> United Nations: *THE DETERMINANTS AND CONSEQUENCES OF POPULATION TRENDS*. New York, 1953, p. 72.

<sup>8</sup> *A CENTURY OF POPULATION GROWTH*. Bureau of the Census, Washington, 1909, p. 93.

that the sex ratio affects marriage behavior directly,<sup>9</sup> and, therefore, the fertility ratio indirectly, in the absence of extensive practice of contraception.

Contraceptive knowledge is known to have existed in the United States long before the 19th century. As a matter of record, *coitus interruptus* was mentioned in historical documents as far back as 1630-1650, and a publication advocating birth control was first printed in America in 1830.<sup>10</sup> Such facts are certainly indicative of the existence of contraception, but they do not seem to shed any light on the extensiveness of the practice. The lack of positive information on the extent of contraceptive practices might possibly be and is taken to denote their limited acceptance in the United States during the early decades of the 19th century.<sup>11</sup>

<sup>9</sup> Brunner, C. T.: Local Variations in the Birth-Rate. *The Economic Journal*, March 1925, 35, pp. 60-65.

Kramm, E. R. and Thomas, D. S.: Rural and Urban Marriage in Relation to the Sex Ratio, *Rural Sociology*, March 1942, 7, 1, pp. 33-39.

Brunner examined the variations of the birth rates of England and Wales in terms of the proportions of the sexes in the population and the proportion of marriages in which women were under 21. He found that the higher the proportion of marriages under 21, the higher was the birth rate in a county (a correlation of .77), and that the proportion of women to men was negatively correlated with the proportion of marriages under 21 (a correlation of -.45, or -.77 if agricultural counties were excluded). When the proportion of women to men was correlated with the birth rate, there was again a negative correlation (-.41, or -.81 if agricultural counties were excluded). His conclusion was that "the sex-distribution of the population determines the age at which the women marry through the keenness or otherwise of the competition for them, and the age of marriage of the women determines the birth rate." *Op. cit.*, p. 65.

Kramm and Thomas utilized the 1930 census data for selected counties in Washington, Oregon, and California, and two samples from the Swedish census of 1935 and examined the relationship between the sex ratio and the proportion of each sex married. Using the sex ratio as the independent variable and the proportion of each sex married as the dependent variable, correlation coefficients and linear regressions were calculated, yielding theoretically relevant implications for the present study. Their conclusion was that "the relative supply of the sexes probably accounts for the major part of the trend in the proportion married." *Op. cit.*, p. 39.

<sup>10</sup> Himes, N. E.: MEDICAL HISTORY OF CONTRACEPTION. Baltimore, the Williams and Wilkins Co., 1936, pp. 224-225. The publication referred to here was entitled MORAL PHYSIOLOGY; OR, A BRIEF AND PLAIN TREATISE ON THE POPULATION QUESTION, by Robert D. Owen.

<sup>11</sup> This contention seems consistent with the sales of birth control literature at that time. Himes reported that the sale of Owen's pamphlet in America and England reached a total of only 75,000 copies over a period of 47 years (1830-1877), and that not more than 10,000 copies of the FRUITS OF PHILOSOPHY, a similar publication, were sold in the United States up to 1839. *Ibid.*, p. 224, and pp. 230-231. When these figures are viewed against the enumerated population of the United

(Continued on page 53)

Reasoned thus, it seems plausible that the sex ratio could have been a factor affecting fertility in the years considered. Derived from this postulate and the empirical studies cited is the following hypothesis to be tested in the present analysis, which treats individual states, even though their numbers varied from census to census, as the basic units in the inquiry. The hypothesis is that, in a state,

the lower the sex ratio (the higher the age at marriage for females and the smaller the proportion of females married), the lower the fertility; or, *conversely*,

the higher the sex ratio (the lower the age at marriage for females and the higher the proportion of females married), the higher the fertility.

#### DATA AND METHOD

Data for the present study were drawn from the United States Census. Little effort was made to correct the census. Variations in the extent of under-enumeration of children under 5 undoubtedly existed in different states and in different censuses, but the adoption of one correction factor for all states would not alter the overall picture of fertility and, for the present purposes, it seemed impractical to work out a correction factor for each state separately. As the extent of under-enumeration cannot be precisely determined, any manipulation of this sort might seriously distort the picture. Census materials were therefore used in their original published form.

However, estimates of the number of children under 5 had to be made for 1800, 1810, and 1820. These three censuses show only the number of children under 10 without the subdivision into age-groups 0-4 and 5-9 given in subsequent censuses. In order to obtain the number of children under 5 prior to 1830, the proportion of those under 5 of the total group under 10 in

States in those years, it does not seem an exaggeration to think that contraception was not widely practised, or that it was then probably not of a magnitude sufficient to modify fertility rates. As a case in point, both of the publications were being sold in England from the 1830's onward, but the decline in English fertility occurred, not before, but after the 1870's when the Bradlaugh-Besant trial and the prosecution of Truelove initiated what has been termed by Himes "the democratization of birth control by publicity." *Ibid.*, ch. X.

1830 was computed for each state. Applying this proportion to the number under 10 in 1800, 1810, and 1820, estimates of the number of children under 5 were obtained.

Furthermore, owing to the age-classifications used in the early censuses, it was not possible to compute sex and fertility ratios on the basis of exactly comparable age-groups throughout all of the period under study. For 1800, 1810, and 1820 these ratios were computed on the basis of the number of males 16-44 per 1,000 females 16-44 and the number of children under 5 per 1,000 females 16-44. From 1830 to 1860, sex ratios were calculated on the basis of males 15-49 and of females 15-49. Fertility ratios for those years were also based on the female population 15-49. The sex and fertility ratios by states are given in the Appendix, and are based on the enumerated *white* population in the censuses, 1800-1860.

It can be seen in the Appendix that in each of the seven decades fairly consistent discrepancies existed between the states either in terms of their sex ratios or fertility ratios. Broadly speaking, relatively low ratios are shown for the New England and the Middle Atlantic states and some of the older states in the South Atlantic region. Sex ratios and fertility ratios are generally somewhat, and in some cases considerably, higher for the states in other areas, such as East North Central, West North Central, East South Central, etc. The two scatter diagrams make visible this positive association between the sex ratio and the fertility ratio. They are for the years 1800 and 1830.

The consistent pattern of variations in both sex and fertility ratios during this period bears out, at least impressionistically, the hypotheses that the lower the sex ratio, the lower the fertility, or that the higher the sex ratio, the higher the fertility ratio. To give statistical substance to these visual observations, Kendall's Coefficient of Rank Correlation technique was used.

Kendall's Rank Correlation was employed instead of the straight Pearsonian  $r$  because this latter method assumes the

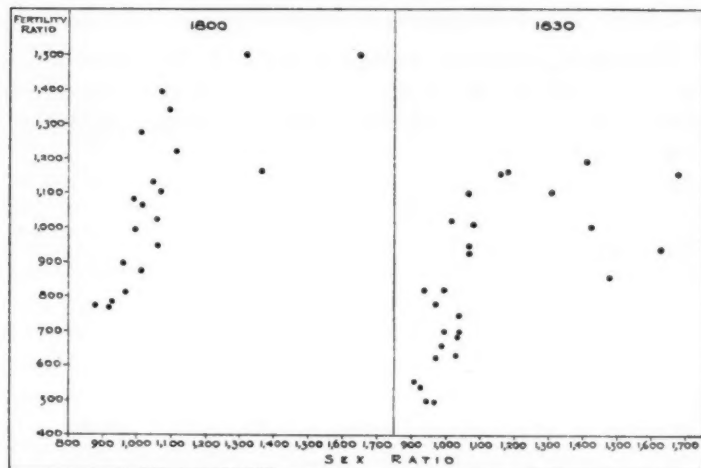


Figure 1. Scatter diagram fertility ratios and sex ratios for States, white population, United States, 1800 and 1830.

existence of a linear relationship between the variables examined. This assumption seems *a priori* unsatisfactory in terms of the two variables in the present analysis; namely, the sex ratio and the fertility ratio.

That is, it does not seem tenable that the fertility ratio could vary positively and indefinitely with the sex ratio even if no contraception of any form existed. For the simple reason that human reproduction is limited by the long period of gestation, the number of children per woman cannot be expected to enlarge in direct proportion to sex ratios. And, the pattern of the dots in the scatter diagrams suggests the possibility of a curvilinear relationship between the two variables. (Fig. 1.)

In view of the above, Kendall's Rank Correlation was used to show the degree of association between sex and fertility ratios by state. The simplicity of this method is consistent with the aim of the present study, which is to demonstrate some demographic factors affecting interstate fertility patterns in the early 19th century. The findings of this inquiry should be regarded as suggestive rather than definitive.

## FINDINGS AND DISCUSSION

The procedure for the testing of the hypothesis was as follows: for each decade, states<sup>12</sup> were first ranked by sex ratios, giving 1 to the state with the highest sex ratio. States were then ranked according to their fertility ratios, assigning 1 to the state with the highest fertility ratio and so on. Coefficients of rank correlation were computed decade by decade, and the results are given in Table 1.

Table 1. Coefficients of rank correlation between sex and fertility ratios, 1800-1860.

YEAR	r	$\frac{S}{\sigma_s}$	SIGNIFICANT AT .01 LEVEL
1800	0.66	4.09	Yes
1810	0.57	3.87	Yes
1820	0.38	2.71	Yes
1830	0.58	4.23	Yes
1840	0.48	3.68	Yes
1850	0.49	4.11	Yes
1860	0.49	4.53	Yes

For method of computation and test of significance, see Hagood, M. J. and Price, D. O.: *STATISTICS FOR SOCIOLOGISTS*, New York, Henry Holt 1952, pp. 469-473.

The coefficients of rank correlation between the sex and fertility ratios are almost uniformly high and all significant, tending to support the notion that demographic factors (of which the sex ratio is one) could have accounted, to some extent, for interstate fertility differences in the early years of the 19th century. Their influence on fertility, as would be expected, tended to diminish as the country advanced in industrial and urban development. The gradual reduction of the coefficients in the second half of the period investigated suggests that fertility performance became more and more independent of demographic factors, but increasingly dependent on socio-economic factors.

It seems appropriate to recall and re-consider the thesis that the decline in American fertility appeared to commence from the beginning of the 19th century, basing its measurement in terms of the fertility ratio.<sup>13</sup>

The reported early decline in American fertility probably could have differed intrinsically from the later fall in the birth

<sup>12</sup> Some of the "states" when first enumerated in the Census were actually called "territories," a fact which is of political significance. For the sake of convenience, they are all referred to as states in the present study.

<sup>13</sup> Willcox, *op. cit.* and Whelpton, *op. cit.*

rate resulting from voluntary and deliberate family limitation. Fertility data for those years are too sketchy to provide a definite answer; but, in at least one series of estimated white birth rates, no appreciable alterations were shown until around the 1830's.<sup>14</sup> The present findings indicate that the fertility ratios for those years were partially affected by demographic factors. Quite apart from the consideration that, as previously mentioned, these demographic factors could have affected marriage behavior directly and fertility indirectly in those years, they might have also been responsible for the apparent early decline in American fertility. That is, changes in the demographic composition of the population could have given rise to some seemingly real modifications in early American fertility *as measured by the fertility ratio*. Consequently, if we speak of fertility decline as an exclusive result of controlled fertility, might it be possible that the reduction in American fertility did not occur until after the date generally accepted?<sup>15</sup>

In conclusion, it appears that, while socio-economic factors are manifestly important as regards fertility behavior, they probably do not enjoy a monopoly over time and space. They should be used with caution to interpret fertility, especially with reference to such newly-settled populations as existed in the United States in the early 19th century, where demographic factors were clearly influential.

<sup>14</sup> See Thompson, W. S. and Whelpton, P. K.: *POPULATION TRENDS IN THE UNITED STATES*. New York, McGraw-Hill, 1933, p. 263, Table 74.

<sup>15</sup> In addition to publications previously cited, see also Thompson: *POPULATION PROBLEMS*, 4th ed., New York, McGraw-Hill, 1953, p. 164 and pp. 175-176. Bennett, M. K.: *THE WORLD'S FOOD*, New York, Harper & Bros., 1954, pp. 46-7.

Appendix: State sex and fertility ratios, 1800-1860.<sup>1</sup> (per 1,000 base population).

	SEX RATIO						FERTILITY RATIO							
	1800	1810	1820	1830	1840	1850	1860	1800	1810	1820	1830	1840	1850	1860
<i>New England</i>														
Maine	1,015	994	953	991	1,005	1,051	1,005	1,068	1,007	877	705	661	536	500
New Hampshire	956	920	902	905	930	954	938	893	814	727	559	501	391	406
Vermont	1,068	956	954	970	993	1,047	1,009	1,098	945	779	631	594	488	442
Massachusetts	925	951	1,064	942	994	961	922	786	756	675	502	470	401	432
Rhode Island	872	925	1,123	923	927	965	919	784	759	708	544	472	431	418
Connecticut	920	926	1,096	962	957	998	963	781	742	663	506	474	408	442
<i>Middle Atlantic</i>														
New York	1,060	1,057	1,034	1,040	1,030	1,026	964	949	1,012	894	700	616	493	508
New Jersey	992	1,002	975	1,031	1,001	930	983	996	938	880	698	657	514	559
Pennsylvania	1,054	1,011	1,020	1,034	1,005	1,025	988	1,033	1,011	959	751	521	611	613
<i>East North Central</i>														
Ohio	1,315	1,089	1,091	1,066	1,072	1,065	1,029	1,500	1,382	1,279	933	838	671	644
Indiana	1,360	1,120	1,111	1,065	1,077	1,081	1,086	1,168	1,197	1,296	1,112	945	763	731
Illinois	—	1,342	1,330	1,155	1,269	1,152	1,168	—	1,307	1,326	1,165	948	747	737
Michigan	—	1,982	2,327	1,623	1,220	1,146	1,149	—	1,205	1,037	945	798	651	629
Wisconsin	—	—	—	—	2,053	1,247	1,137	—	—	—	—	867	736	787
<i>West North Central</i>														
Minnesota	—	—	—	—	—	2,028	1,274	—	—	—	—	—	780	891
Iowa	—	—	—	—	1,519	1,139	1,140	—	—	—	—	973	812	822
Missouri	—	1,299	1,409	1,675	1,236	1,182	1,180	—	1,384	1,276	1,165	1,007	764	754
Dakotas	—	—	—	—	—	—	1,710	—	—	—	—	—	—	465
Nebraska	—	—	—	—	—	—	1,667	—	—	—	—	—	—	773
Kansas	—	—	—	—	—	—	1,377	—	—	—	—	—	—	759

<i>South Atlantic</i>	963	995	1,001	989	960	1,009	1,038	810	906	857	656	660	579	601
Delaware	1,010	1,025	1,013	1,024	980	1,042	979	875	874	826	634	648	576	567
Maryland	1,004	981	986	970	972	1,002	1,001	1,288	990	952	788	768	641	659
Virginia	986	961	944	956	917	932	953	1,081	1,045	1,027	823	789	634	623
North Carolina	1,049	1,047	1,034	992	990	986	984	1,129	1,081	1,025	829	812	636	608
South Carolina	1,112	1,103	1,099	1,077	1,066	1,032	1,025	1,227	1,220	1,170	1,017	981	761	704
Georgia	—	—	—	1,420	1,773	1,288	1,153	—	—	—	1,010	859	788	742
Florida	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>East South Central</i>	1,097	1,070	1,027	1,061	1,103	1,084	1,077	1,342	1,286	1,175	950	897	736	718
Kentucky	1,070	1,052	984	1,018	988	992	1,039	1,396	1,301	1,246	1,023	943	728	696
Tennessee	—	—	1,258	1,178	1,162	1,063	1,046	—	—	1,335	1,171	1,040	746	710
Alabama	1,643	1,485	1,402	1,306	1,316	1,170	1,138	1,500	1,226	1,304	1,111	1,064	819	724
Mississippi	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>West South Central</i>	—	—	1,363	1,402	1,368	1,182	1,154	—	—	1,289	1,200	1,128	874	805
Arkansas	—	1,372	1,611	1,479	1,557	1,385	1,192	—	1,058	1,026	868	821	623	633
Louisiana	—	—	—	—	—	1,350	1,301	—	—	—	—	—	827	855
Texas	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Mountain</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Colorado	—	—	—	—	—	—	29,263	—	—	—	—	—	—	428
New Mexico	—	—	—	—	—	1,032	1,161	—	—	—	—	—	572	650
Utah	—	—	—	—	—	1,249	974	—	—	—	—	—	846	1,097
Nevada	—	—	—	—	—	—	1,429	—	—	—	—	—	—	763
<i>Pacific</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Washington	—	—	—	—	—	—	4,624	—	—	—	—	—	—	1,040
Oregon	—	—	—	—	—	2,319	2,027	—	—	—	—	—	953	1,100
California	—	—	—	—	—	20,019	3,277	—	—	—	—	—	484	764

<sup>1</sup> Sources: United States Census.  
 — These States were not enumerated in the Census.

## DEMOGRAPHIC AND SOCIAL ASPECTS OF CHILDLESSNESS: CENSUS DATA

WILSON H. GRABILL AND PAUL C. GLICK<sup>1</sup>

**C**HILDLESSNESS is a topic of interest from many points of view. From the viewpoint of demographers, the person who remains childless throughout the child-bearing period leaves behind no permanent addition to the population. If the number of inhabitants is to be maintained, the people who have children must make up for those who have no progeny. Eugenicists are concerned with the possible effect of differential fertility on the quality of the future population—and childlessness is one of the factors involved. Clinicians and physicians who are called upon to offer advice and medical aid to people of limited fecundity have a strong interest in the number and description of persons who are childless. Public health officials are concerned about childlessness for many reasons, including the high incidence of sterility from venereal disease among certain population groups. Housing needs and other consumer requirements are affected by the extent to which people do or do not have children. Changes in the timing of first births and in the amount of childlessness may cause important fluctuations in birth rates over a period of years.

Data on voluntary or involuntary childlessness are sometimes presented as one aspect of comprehensive demographic investigations. For example, the well-known Indianapolis Study of Social and Psychological Factors Affecting Fertility found in 1941 that among native white Protestant couples who had been married 12 to 14 years and who had completed at least the eighth grade of school, 19 per cent had never had a live-born child and 9 to 13 per cent of the couples were classified as involun-

<sup>1</sup> Bureau of the Census.

Read in Chicago on May 4, 1958, at the annual meeting of the Population Association of America. The opinions in this paper do not necessarily reflect the views of the Bureau of the Census.

tarily childless. A statement that about 10 per cent of married couples of childbearing age have seriously impaired fecundity is occasionally seen in the literature. It may also be relevant to note that in public opinion polls which ask about the ideal size of family, less than one per cent of the people regard the childless family as the ideal size.

The present paper is a summary and brief analysis of data on childlessness that are available in the reports of the Bureau of the Census. The cause of the childlessness is not sought. The term is used here to describe the status of the woman or of the couple at the time of the census or survey rather than the lifetime status. It simply means that the woman being studied has never had a live-born child up to the time of the census or survey. To the writers' knowledge, this is the first time that census data on childlessness have been brought together in a report dealing with that topic alone.

The data come from the decennial censuses of 1910, 1940, and 1950, and from the Current Population Surveys of April 1952, April 1954, and March 1957. In these censuses and surveys, only those women who were reported as having been married were asked the number of children they had ever borne. The data probably include most of the illegitimate as well as legitimate fertility, however, because there is evidence that most women with illegitimate sons or daughters in their home report themselves as having been married.

A brief note of quality of the data is in order. The data on childlessness are of variable quality for different dates and for different groups, but in general the biases are small. Thus, there is some indication that the data for 1910 include a few stillbirths, thereby reducing slightly the apparent percentage of women who are childless. Moreover, a study of the number of children in the homes of women with and without a report on number of children ever born shows that the 1940 data are affected by a tendency for some enumerators to make no entry on the number of children for childless women, for whom they should have, of course, entered a "zero." Accordingly, the

women with no report on number of children include a relatively large proportion who actually have borne no children. Thus, in 1940, among ever-married white women 45 to 49 years old reporting on number of children ever born, 14.8 per cent reported that they had had no children; if the results were extended to cover all women (including those with no report on children), the proportion childless would be raised by 1.3 points, to 16.1 per cent. Data adjusted for nonreports are presented in this paper for all dates except 1910. Again, white women in the 1950 Census had a net undercount of 1.7 per cent in number of children ever born as judged by a comparison with the entry for order of birth on the birth registration record for children born in the first three months of 1950. Nonwhite women had a net undercount of 7.6 per cent. Thus, the figures on per cent childless among ever-married women may tend to be a little too high from underreporting of children, especially for nonwhites. There is evidence of relatively more underreporting of children ever born for old women than for middle-age women, perhaps in part because of some mothers being reported as childless, and in part because of higher survival rates for women with moderate to small families. Thus, the surviving white women 70 to 74 years old in 1940 reported about 10 per cent fewer children ever born, on the average, than the same cohort 30 years earlier, that is, in 1910 when the women were 40 to 44 years old. On balance, the census data are thought to be of reasonable quality, but the small biases should be kept in mind.

#### SECULAR TRENDS

It is probable that at one time, many years ago, the percentage of married women who were childless was far smaller than it is today. As an example of extreme possibilities in this respect, Table 1 presents data for women from Russia and from Poland who were living in the United States in 1910. According to this table, only about 3 per cent were childless among aged women who had ever been married. The women of Utah, most of whom are Mormons, offer another interesting

*Demographic and Social Aspects of Childlessness* 63

but a typical example of low proportions childless. In 1910, only 6.1 per cent of all Utah women 50 to 74 years old, were childless; the corresponding figure was 4.5 per cent for ever-married women. Though a mere 1.6 per cent of the older women in Utah half a century ago had never married, closer to 8 per cent of the women in the country as a whole never marry and, in addition, a sizable proportion of those who do marry never have a child. The lowest recorded national (United States) figures on childlessness are for women 70 to 74 years

Table 1. Per cent childless and average number of children ever born for ever-married white women who were born in Russia and Poland, by age, for the United States: 1910. (Data based on 8.9 per cent sample.)

AGE AND COUNTRY OF BIRTH OF WOMAN	WOMEN REPORTING ON CHILDREN			WOMEN NOT REPORTING ON CHILDREN
	Number	Per Cent Childless	Children Ever Born Per 1,000 Women	
<i>Russia</i>				
15 to 19 Years	3,464	59.0	476	838
20 to 24 Years	44,047	25.1	1,211	3,678
25 to 29 Years	66,096	9.8	2,362	2,375
30 to 34 Years	53,775	6.2	3,730	1,745
35 to 39 Years	49,584	5.4	4,917	1,417
40 to 44 Years	34,870	3.2	6,192	1,044
45 to 54 Years	44,733	3.1	6,963	1,554
55 to 64 Years	18,923	2.3	7,500	1,306
65 to 74 Years	7,039	3.2	7,464	904
<i>"Poland"</i> <sup>1</sup>				
15 to 19 Years	5,338	51.9	586	987
20 to 24 Years	44,864	19.8	1,430	3,393
25 to 29 Years	51,034	9.5	2,644	2,097
30 to 34 Years	38,435	5.9	4,047	1,171
35 to 39 Years	32,441	5.2	5,509	1,276
40 to 44 Years	25,373	4.8	6,702	876
45 to 54 Years	33,662	4.1	7,314	1,432
55 to 64 Years	14,160	3.9	7,580	1,013
65 to 74 Years	5,826	3.2	7,661	863

<sup>1</sup> Poland was not a political entity in 1910. The category "Poland" comprises persons who nonetheless reported Poland as their birthplace and those who reported that they were born in Germany, Austria-Hungary, and Russia but who reported Polish mother tongue.

SOURCE: 1940 CENSUS OF POPULATION, special report, DIFFERENTIAL FERTILITY, 1940 and 1910—Women by Number of Children Ever Born, Table 43.

old at the time of the 1910 Census: 14.4 per cent of all women and 7.7 per cent of the ever-married women 70 to 74 years old were childless.

Table 2 and Figures 1 and 2 present data for women of childbearing age from 1910 to 1957. As may be noted from the table, 10.4 per cent of the ever-married women 40 to 44 years old in 1910 were childless. By comparing the figure of 7.7 per cent for women 70 to 74 in 1910 with the figure of 10.4 per cent for those 40 to 44 in 1910, we find suggestion of an upward trend in childlessness which started as far back as the available data extend and which continued until only a few years ago. By 1940, the proportion childless had advanced to 17.4 per cent among ever-married women 40 to 44 years old and by 1950 it had reached a peak of 20 per cent.

Subsequent cohorts of women have had a declining proportion with no children, but the cycle will not be complete for at least another decade. The upsurge in childbearing that occurred during and especially after World War II brought the

Table 2. Per cent childless among women 15 to 49 years old, by age and marital status, for the United States: 1957, 1950, 1940, and 1910.

MARITAL STATUS AND AGE	1957	1950	1940	1910
<i>All Women</i>				
15 to 19 Years	91.6	91.8	94.6	94.5
20 to 24 Years	48.1	54.5	68.2	63.3
25 to 29 Years	22.8	31.5	45.9	39.2
30 to 34 Years	17.7	24.8	34.5	28.6
35 to 39 Years	17.5	25.8	28.8	23.2
40 to 44 Years	20.0	26.6	25.3	20.2
45 to 49 Years	23.3	26.8	23.9	18.1
<i>Ever-Married Women</i>				
15 to 19 Years	47.9	52.8	54.6	42.7
20 to 24 Years	26.9	33.3	39.9	24.2
25 to 29 Years	13.1	21.1	30.1	17.2
30 to 34 Years	11.3	17.3	23.3	13.7
35 to 39 Years	12.3	19.1	19.9	11.6
40 to 44 Years	14.1	20.0	17.4	10.4
45 to 49 Years	17.7	20.4	16.8	9.5

SOURCE: Current Population Reports, Series P-20, No. 82, in preparation, and 1940 CENSUS OF POPULATION, special report, DIFFERENTIAL FERTILITY, 1940 and 1910—Fertility for States and Large Cities, Table 4.

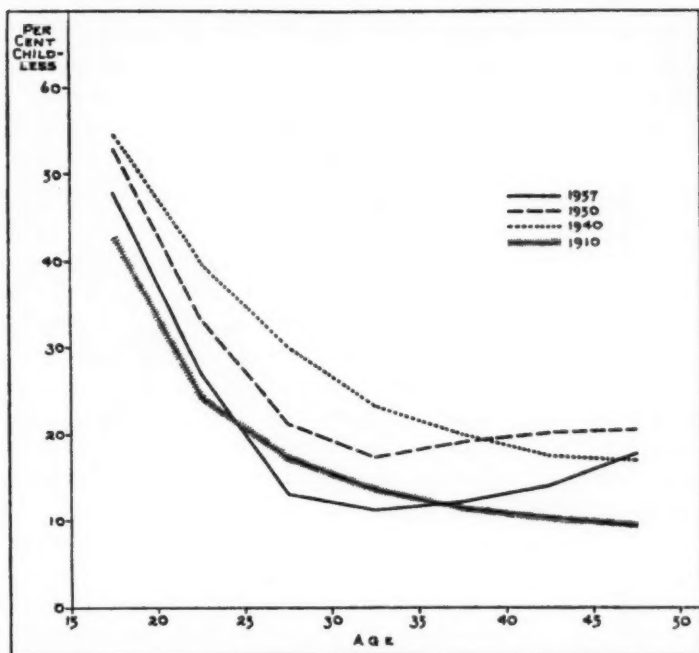


Fig. 1. Per cent childless among ever-married women 15 to 49 years old, by age, for the United States: 1957, 1950, 1940, and 1910. SOURCE: Table 2.

proportion childless among ever-married women 40 to 44 years old down to 14.1 per cent by 1957. Already, however, women in younger groups had attained still lower rates of childlessness, as illustrated by those 30 to 34 years old with only 11.3 per cent with no children born alive. Almost beyond doubt, this group will eventually complete the childbearing period with less than 10 per cent childless—a lower rate than that for women who completed their childbearing about 1910.

Most of the data in this report are for women who have been married. From the viewpoint of requirements for population replacement, women who have children must make up for those who have none. In this very important sense, the proportion childless among all women is more significant than

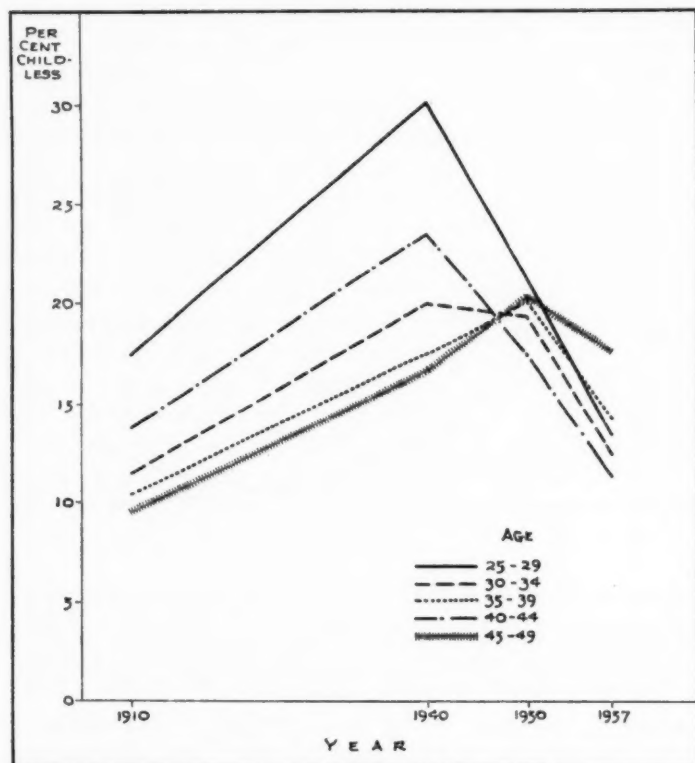


Fig. 2. Trends in the per cent childless among ever-married women 25 to 49 years old, by age, for the United States, 1910 to 1957. Source: Table 2.

the proportion among women who have been married. For those whose concern is national population growth, data on per cent childless for all women presented in Table 2 may well be the most meaningful figures in our report.

The trends in per cent childless among women of all marital classes are similar to those for ever-married women but the magnitudes are uniformly larger. In March 1957, about 18 per cent were childless among all women 30 to 34 years old, as compared with 35 per cent of the women of this age in 1940

and 29 per cent in 1910. These figures may be interpreted as showing that a larger proportion of the women in 1957 than in 1940 were participating in the replacement of the population.

#### GEOGRAPHIC VARIATIONS

Age group 30 to 34 years will be used to demonstrate some of the geographic variations in childlessness. This age group was selected because it had the lowest per cent childless in both 1950 and 1957.

Table 3 shows that the rate of childlessness was highest in urban areas and lowest on rural farms, among white and non-white women, in 1910, 1940, and 1950. For all color-area groups, the 1940 rates of childlessness were higher than those for 1910 or 1950. These facts indicate that the upward trend in childlessness before 1940 was not limited to any segment of the population. Similarly the decline in childlessness in the 1940's and 1950's spread to all area and color groups.

Table 4 presents data from the 1950 Census for ever-married women by regions, urban and rural. As may be seen from the table, the regions have similar proportions of ever-married white women who are childless. The range of variation is quite narrow, from 15.1 per cent in the North Central region to 16.8 per cent in the West. There is also little difference

Table 3. Per cent childless among white and nonwhite ever-married women 30 to 34 years old, for the United States, urban and rural: 1950, 1940, and 1910. (Urban-rural classification by 1940 Census rules, for all dates.)

COLOR AND RESIDENCE	1950	1940	1910
White	15.8	22.4	13.4
Urban	17.9	26.6	17.9
Rural Nonfarm	13.5	18.7	10.8
Rural Farm	10.0	11.8	6.8
Nonwhite	30.2	30.8	16.4
Urban	35.1	38.3	27.4
Rural Nonfarm	23.2	26.5	12.8
Rural Farm	14.4	16.1	8.5

SOURCE: 1950 CENSUS OF POPULATION, Vol. IV, Special Reports, Part 5, Chapter C, Tables 4 and 5; 1940 CENSUS OF POPULATION, DIFFERENTIAL FERTILITY, 1940 and 1910—Fertility for States and Large Cities, Table 4.

when inter-regional comparisons are made by urban and rural residence. In every region, a much larger proportion of non-white women than of white women are childless. In urban areas about one-third of the nonwhite women are childless. In the various types of areas rates of childlessness are about half again to twice as high for nonwhite women as for white women.

Table 5 presents data for white ever-married women 30 to 34 years old in 1950 by States. The proportion childless among these women varies from 7.0 per cent in Utah to 20.6 per cent in Florida. It is 28.0 per cent in Washington, D. C., a city which has long had one of the least fertile white populations of any large city in the United States. The pattern of the rates of childlessness by States suggests that local conditions of other kinds may be more significant as determining factors than the degree of industrialization. Thus, the childlessness rate is relatively low in Michigan but relatively high in Rhode Island, both of which are industrial States. It is low in Alabama and the Dakotas but high in many of the other largely rural States.

In Table 6, a high degree of consistency is found in the rates of childlessness by size of place. For women living in urban-

Table 4. Per cent childless among ever-married white and nonwhite women 30 to 34 years old, for regions, urban and rural: 1950. (Data based on 2.4 per cent sample. Per cent not shown where base is less than 4,000.)

COLOR AND REGION	TOTAL	URBAN	RURAL NONFARM	RURAL FARM
White	15.8	17.7	13.0	10.0
Northeast	15.6	16.5	12.9	9.0
North Central	15.1	17.1	12.2	10.5
South	16.1	19.3	13.7	10.3
West	16.8	18.8	13.0	8.2
Nonwhite	30.2	34.8	22.5	14.4
Northeast	33.7	34.4	—	—
North Central	38.4	39.6	—	—
South	26.8	32.9	22.7	14.7
West	30.2	33.7	19.5	—

SOURCE: 1950 CENSUS OF POPULATION, Vol. IV, Special Reports, Part 5, Chapter C, Table 32. (United States figures from Tables 20 and 22.)

*Demographic and Social Aspects of Childlessness* 69

ized areas, the entire urbanized area is used as the basis of size classification. (An urbanized area consists of a city of 50,000 or more inhabitants in 1950 plus the surrounding thickly populated area.) The table shows that childlessness increases with the size of the place of residence. Thus, among ever-married women of childbearing age in 1952, the per cent childless increased from about 19 per cent for women in urbanized areas of less than 250,000 inhabitants to 26 per cent in urbanized areas of 3,000,000 or more. A continuum of consistently increasing childlessness rates was also found from rural farms up through the smaller (nonurbanized) urban areas.

Table 5. Per cent childless among ever-married white women 30 to 34 years old, for states: 1950.

<i>Northeast:</i>		District of Columbia	28.0
Maine	13.7	Virginia	17.2
New Hampshire	12.3	West Virginia	14.2
Vermont	9.1	North Carolina	16.5
Massachusetts	15.9	South Carolina	15.8
Rhode Island	17.8	Georgia	16.8
Connecticut	16.2	Florida	20.6
New York	16.2	Kentucky	14.7
New Jersey	15.8	Tennessee	16.2
Pennsylvania	15.0	Alabama	13.2
		Mississippi	15.3
<i>North Central:</i>		Arkansas	13.6
Ohio	16.1	Louisiana	14.3
Indiana	15.7	Oklahoma	14.8
Illinois	15.6	Texas	16.3
Michigan	13.1		
Wisconsin	13.4	<i>West:</i>	
 		Montana	14.1
Minnesota	13.7	Idaho	11.2
Iowa	15.0	Wyoming	11.5
Missouri	17.9	Colorado	15.5
North Dakota	12.1	New Mexico	16.7
South Dakota	10.8	Arizona	15.9
Nebraska	15.2	Utah	7.0
Kansas	15.6	Nevada	19.8
<i>South:</i>		Washington	14.7
Delaware	19.8	Oregon	15.4
Maryland	14.7	California	18.8

SOURCE: Same as Table 4.

## DEMOGRAPHIC VARIATION

*Age.* Figure 3 demonstrates the rapid decline in per cent childless from age 15 to age 29. As a word of caution, the figure shows the per cent childless among women by single years of age in 1950 rather than the experience of a real cohort as it passes through life. In the chart, the increase in per cent childless after age 30 reflects secular trends of the past; a real cohort would continue to have at least a small decrease in per cent childless until the end of the childbearing ages. The chart is plotted so as to show that many of the childless women are still living with their first husband. From the graph, it can be inferred that broken marriages account for little of the childlessness.

*Detailed Marital Status.* The observation just made about broken marriages does not preclude the existence of wide differences in rates of childlessness among women in the several marital status categories. According to Table 7, among white women 30 to 34 years old in 1950, the unusually high rate of 34 per cent childless was found among women living apart from their husband for reasons other than marital discord. The husbands of many of these women were in institutions or employed in remote areas. By contrast, note the low rate of 14 per cent childless among white women still living with their first husband. White women living with their husbands

Table 6. Per cent childless among ever-married women 15 to 44 years old, standardized for age, by size of place: April 1952. (The standard is the distribution by age of all ever-married women in the United States in 1952.)

AREA	PER CENT CHILDLESS
United States	20.7
Urban	22.8
In Urbanized Areas	22.9
Areas of 3,000,000 or More	26.1
1,000,000 to 3,000,000	25.4
250,000 to 1,000,000	21.3
Less Than 250,000	18.7
Other Urban Areas	22.1
Places of 25,000 or More	23.3
2,500 to 25,000	21.4
Rural Nonfarm	17.9
Rural Farm	13.6

SOURCE: Current Population Reports, Series P-20, No. 46, December 31, 1953, Table 4.

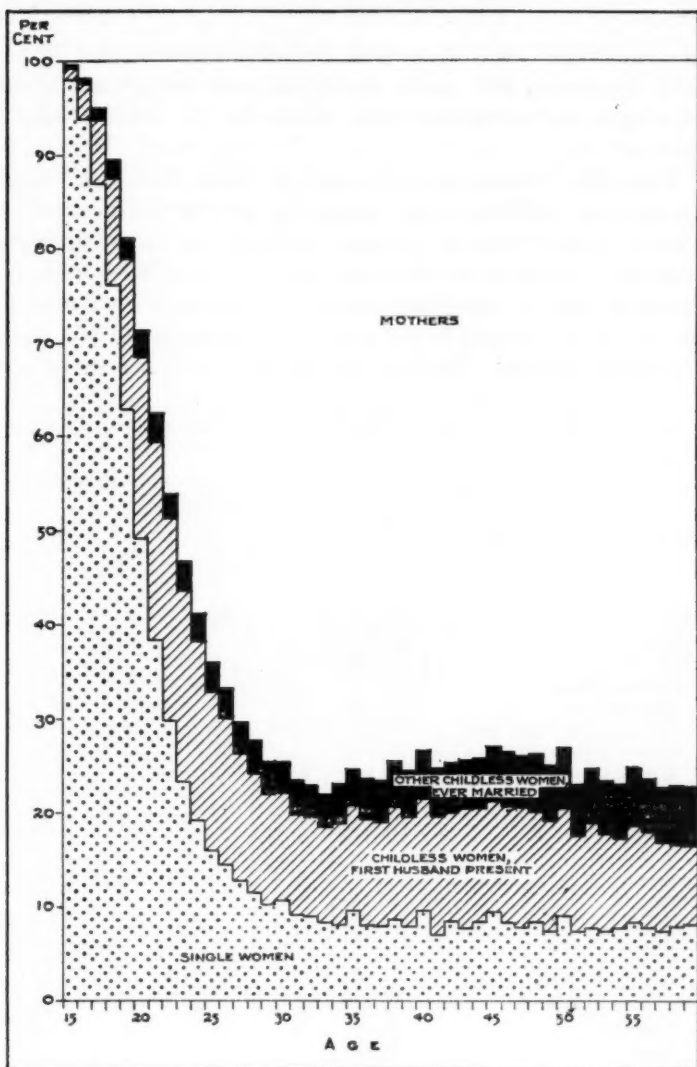


Fig. 3. Distribution of white women 15-59 years old by marital status and childlessness, by single years of age, for the United States: 1950. SOURCE. 1950 CENSUS OF POPULATION, Vol. IV, Special Reports, Part 5, Chapter C, Tables 8 and 9.

in remarriages also had a quite low childlessness rate, 18 per cent, suggesting that stable marriages, even though not initial marriages, are consistent with relatively low rates of childlessness.

Nonwhite women of each marital status had quite large proportions childless, both nationally and in nonfarm areas. The extreme rate of 43 per cent childless for urban divorced nonwhite women is noteworthy. On the other hand, it is interesting that in rural-farm areas only about 13 per cent of the nonwhite women living with their husband in first marriages are childless. This low percentage is evidence that there

Table 7. Per cent childless among white and nonwhite women 30 to 34 years old, by detailed marital status, for the United States, urban and rural: 1950. (Data based on 2.4 per cent sample. Per cent not shown where base is less than 4,000.)

COLOR AND MARITAL STATUS	NUMBER OF WOMEN	PER CENT CHILDLESS			
		United States	Urban	Rural Nonfarm	Rural Farm
White	5,276,280	23.5	26.5	17.9	15.7
Single	485,610	(1)	(1)	(1)	(1)
Married	4,581,660	15.2	17.0	12.7	9.9
Husband Present	4,441,710	14.9	16.6	12.4	9.8
Married Once	3,910,860	14.4	16.1	12.1	9.6
Married More Than Once	530,850	18.0	20.1	14.4	11.5
Husband Absent	139,950	26.5	27.7	25.0	18.1
Separated	75,360	20.1	20.1	18.5	15.0
Other	64,590	33.9	36.8	30.0	20.9
Widowed	66,870	20.8	23.9	14.3	10.7
Divorced	142,140	30.9	32.9	24.3	17.0
Nonwhite	616,440	36.1	40.7	28.7	19.8
Single	52,410	(1)	(1)	(1)	(1)
Married	515,070	29.4	34.0	22.1	14.5
Husband Present	422,790	28.8	34.2	20.6	14.0
Married Once	325,980	28.7	34.5	20.7	13.2
Married More Than Once	96,810	29.0	33.0	20.4	17.4
Husband Absent	92,280	32.1	33.3	30.1	20.6
Separated	76,110	30.7	31.9	26.6	22.4
Other	16,170	38.6	40.9	—	—
Widowed	23,790	33.8	36.8	—	—
Divorced	25,170	43.0	46.1	—	—

<sup>1</sup> For purposes of this table, single women are assumed to be childless.  
SOURCE: 1950 CENSUS OF POPULATION, Vol. IV, Special Reports, Part 5, Chapter C, Tables 16 and 17.

# Demographic and Social Aspects of Childlessness 73

is not a high incidence of sterility among nonwhites in farm areas.

*Age at First Marriage.* The proportion of women who remain childless increases with age at marriage, as may be noted from the data in Table 8. Among women married 10 years or more in 1950, only 6.3 per cent of those who married at age 14 to 16 years were childless. Some corresponding figures are 11.0 per cent for marriages at age 20, 22.8 per cent for marriages at age 25 to 29, and 55.4 per cent for marriages at age

Table 8. Per cent childless among women 14 to 59 years old married once and husband present by selected ages at marriage, duration of marriage, and color, for the United States, farm and nonfarm: 1950. (Data based on 0.8 per cent sample. Per cent not shown where base is less than 12,000.)

AREA, COLOR, AND YEARS MARRIED	AGE OF WOMEN AT FIRST MARRIAGE—YEARS							MEDIAN AGE AT MARRIAGE—YEARS	
	Total, 14 to 59	14 to 16	18	20	22	25 to 29	35 to 39	Childless Women	Total Women
<i>United States</i>									
<i>Total</i>									
Married Less Than 2 Years	73.1	67.9	71.6	73.6	73.6	75.3	73.2	20.7	20.6
2 to 4 Years	30.8	19.6	23.7	28.8	32.1	36.3	63.2	21.6	20.8
5 to 9 Years	18.1	9.5	10.1	13.2	16.1	24.5	61.0	23.6	21.1
10 Years or More	14.2	6.3	7.4	11.0	13.1	22.8	55.4	23.5	20.9
<i>Nonwhite</i>									
Married Less Than 2 Years	58.9	56.3	59.0	56.7	—	66.2	—	20.6	20.4
2 to 4 Years	33.4	16.3	23.2	31.7	33.1	50.0	53.5	22.0	20.2
5 to 9 Years	29.2	10.9	14.4	27.8	33.7	48.4	48.6	23.4	20.5
10 Years or More	22.5	12.5	14.5	22.7	22.9	37.8	45.5	22.0	19.8
<i>Urban and Rural Nonfarm</i>									
<i>Total</i>									
Married Less Than 2 Years	74.0	68.1	72.0	73.0	74.2	76.5	74.7	20.9	20.8
10 Years or More	15.0	6.9	7.7	11.5	13.8	23.6	56.6	23.6	21.0
<i>Nonwhite</i>									
Married Less Than 2 Years	59.5	—	58.5	—	—	67.4	—	21.0	20.6
10 Years or More	26.3	15.3	16.7	26.5	25.7	42.5	51.9	22.0	20.0
<i>Rural Farm</i>									
<i>Total</i>									
Married Less Than 2 Years	66.7	67.3	69.8	79.2	—	62.5	—	19.3	19.4
10 Years or More	9.8	4.3	6.1	8.5	9.9	17.2	48.6	22.7	20.1
<i>Nonwhite</i>									
10 Years or More	10.1	5.5	8.4	9.5	12.9	18.0	—	21.8	19.3

SOURCE: 1950 CENSUS OF POPULATION, Vol. IV, Special Reports, Part 2, Chapter E, Table 4.

35 to 39 years. Turning to marriages of less than two years duration, some persons may be surprised to find that the majority of the women reporting very young marriages have not yet become mothers. Among women married before the age of 17, 20 per cent were reported as still childless after having been married for two to four years.

The data in Table 8 indicate consistently that age at marriage is a very strong factor in the eventual per cent childless but much less so with respect to childlessness in the early years of marriage. For instance, women who marry in their twenties are more likely to be childless in the first two years of married life than the women who marry in their thirties. But only about half of the women who marry in their late thirties remain childless.

If women in successive stages of marriage are compared, it can be seen that the women who are childless have a higher median age at marriage than other women. Among the women who had been married 10 years or more in 1950, the median age at marriage, for the currently childless women was about

Table 9. Per cent childless among white and nonwhite women 15 to 44 years old married once and husband present by years married, for the United States: 1950. (Data based on 2.4 per cent sample.)

YEARS MARRIED	WHITE		NONWHITE	
	Number of Women	Per Cent Childless	Number of Women	Per Cent Childless
Less Than 1 Year	693,480	90.7	68,460	73.4
1 Year	679,950	60.8	68,730	45.0
2 Years	1,118,040	41.4	120,750	37.6
3 Years	1,287,960	28.3	130,380	34.1
4 Years	1,199,010	22.5	114,390	29.8
5 Years	940,740	20.5	94,920	33.2
6 Years	791,370	17.3	85,200	30.9
7 Years	853,650	15.5	76,380	27.8
8 Years	1,006,440	15.2	82,380	28.1
9 Years	892,680	12.2	65,310	24.7
10 to 14 Years	3,957,060	13.1	326,850	26.6
15 To 19 Years	2,783,490	11.4	226,470	18.6
20 Years or More	2,331,240	9.4	214,440	16.9

SOURCE: 1950 CENSUS OF POPULATION, Vol. IV, Special Reports, Part 5, Chapter C, Tables 18 and 19.

2½ years older than that for all women, according to the last two columns in Table 8.

Though the lifetime proportion childless is twice as high for

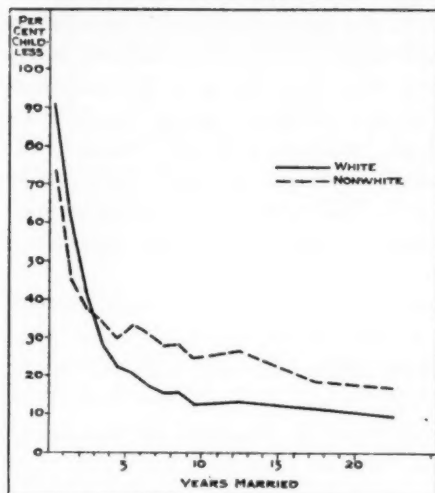


Fig. 4. Comparison of the per cent childless by years married, for white and nonwhite women 15-44 years old, married once and husband present, for the United States: 1950. SOURCE: Table 9.

nonwhite as for white women, the nonwhite women have consistently much smaller percentages of childlessness in the first two years of marriage than do the white women. Moreover, on rural farms, nonwhite women differ very little from the white women with respect to the per cent childless after at least 10 years of marriage.

Greater detail on duration of marriage is shown in Table 9 and Figure 4 for white and

nonwhite women at the time of the 1950 Census. The data indicate that smaller proportions of nonwhites than whites are childless in the first two years of marriage, and that the reverse holds true after the second year of marriage.

Attention is drawn especially to the first row of figures in Table 9. The numbers indicate that 90.7 per cent of the whites and 73.4 per cent of the nonwhites in the first year of marriage are childless. These figures should be interpreted in the light of the fact that about 75 per cent of the women in the first year of marriage have been married for less than nine months and many of the remaining 25 per cent have not had a child.

Data on childlessness among remarried women by duration of

marriage are presented in Table 10. The median age of women at remarriage tends to be approximately age 30. About three-tenths were childless among women who remarried at age 30 to 34 years and who were in the first two years of remarriage in 1950. Of the seven-tenths who had children, probably many were women whose children were born during a previous marriage. The rate of three-tenths childless among recently remarried women is fairly high, however, and may indicate that childless women with broken marriages are more likely to be selected as marriage partners than mothers with broken marriages, even though the mothers may have more compelling economic reasons to remarry.

Evidently not many women who had no children in their first marriage have any in their second marriage unless they remarry while still relatively young. Among that half of the women who remarried at age 30 and over, the per cent childless does not decrease much as the duration of remarriage lengthens, whereas the few women who remarry before they are 25 do have a considerable decrease in childlessness with

Table 10. Per cent childless among women 14 to 59 years old married more than once and husband present, by selected ages at current marriage and duration of marriage, for the United States, total and rural farm: 1950. (Data based on 2.4 per cent sample. Per cent not shown where base is less than 4,000.)

AREA AND YEARS IN REMARRIAGE	AGE OF WOMAN AT REMARRIAGE—YEARS							MEDIAN AGE AT REMARRIAGE—YEARS	
	Total, 14 to 59	14 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	Childless Women	Total Women
<i>United States</i>									
<i>Remarried</i>									
Less Than 2 Years	33.8	55.2	41.9	33.7	30.0	30.2	28.1	28.1	30.7
2 to 4 Years	24.0	21.6	21.5	21.6	26.9	28.6	28.4	30.2	28.9
5 to 9 Years	22.2	13.9	16.5	20.5	26.3	27.3	27.0	32.3	30.0
10 Years or More	18.7	10.0	13.9	20.9	25.2	25.2	24.2	28.3	25.9
<i>Rural Farm</i>									
<i>Remarried</i>									
Less Than 2 Years	29.5	56.6	37.1	23.1	26.2	14.9	—	25.0	29.3
10 Years or More	12.0	5.4	10.0	15.2	15.1	19.2	16.4	27.4	24.3

SOURCE: 1950 CENSUS OF POPULATION, Vol. IV, Special Reports, Part 2, Chapter E, Table 8.

# Demographic and Social Aspects of Childlessness 77

advancing duration of remarriage. It must be remembered, of course, that the data in Table 10 to which the discussion refers are cross-sectional rather than longitudinal for a cohort of women passing through life.

We shall not discuss childlessness among widowed women beyond noting that relatively few women become widows before the end of the childbearing period. Table 7 presented data on childlessness among widows 30 to 34 years old.

A much larger proportion of women are separated or divorced than are widowed during the childbearing ages. Illustrative data on childlessness among separated and divorced women are presented in Table 11. It should be noted that these data reflect the marital status at the survey date and exclude women who have had their marriages reconciled or who have remarried. The table shows a decrease in per cent childless among separated and divorced women as the duration of separation or divorce lengthens. This decrease should be considered as further evidence of the greater likelihood that childless women will remarry or become reconciled with their

Table 11. Per cent childless among separated and divorced women 14 to 59 years old by selected ages at separation or divorce and duration of separation or divorce, for the United States: 1950. (Data based on 2.4 per cent sample.)

MARITAL STATUS AND DURATION	AGE OF WOMAN AT SEPARATION OR DIVORCE—YEARS				MEDIAN AGE AT SEPARATION OR DIVORCE—YEARS	
	Total, 14 to 59	14 to 19	25 to 29	40 to 44	Childless Women	Total Women
<i>Separated</i>						
Less Than 2 Years	30.5	43.5	30.5	26.0	26.6	27.8
2 To 4 Years	28.5	29.1	28.0	28.3	29.2	29.8
5 To 9 Years	25.7	22.9	26.1	28.4	30.7	30.9
10 Years or More	20.9	14.3	22.4	23.5	29.2	27.8
<i>Divorced</i>						
Less Than 2 Years	32.7	52.8	32.1	27.8	28.2	30.2
2 To 4 Years	32.1	38.7	34.8	29.5	30.4	31.8
5 To 9 Years	31.7	33.2	33.6	28.3	32.5	33.4
10 Years or More	29.7	24.0	32.4	24.8	29.1	29.7

SOURCE: 1950 CENSUS OF POPULATION, Vol. IV, Special Reports, Part 2, Chapter E, Tables 18 and 23.

first husband. The fairly large proportions childless among recently separated or divorced women is in accord with the hypothesis that children help to preserve the marriage.

*Timing of First Births.* Inasmuch as data on birth of a first child represent changes from a childless status, it seems pertinent to give a few figures on the spacing of first births. Table 12 presents illustrative data of this type from the 1950 Census for a cohort of women. The group of women was married at age 20 in 1932, a depression year. The subsequent fertility experience of this cohort is not typical of women who married in more prosperous

Table 12. Spacing between marriage and birth of the first child, for women 38 years old in 1950 who were married at age 20, and who in 1950 had 1 to 5 children ever born, first husband and all children present in the household, for the United States. (Data based on 1 per cent sample.)

Number of Women	52,300
Per Cent	100.0
<i>Interval Between Marriage and Birth of First Child<sup>1</sup></i>	
0.0 to 0.9 Years	3.8
0.0 to 1.9 Years	30.2
1.0 to 2.9 Years	25.0
2.0 to 3.9 Years	9.9
3.0 to 4.9 Years	4.6
4.0 to 9.9 Years	18.2
9.0 to 18.9 Years	8.2
Median Spacing (Years)	2.1 <sup>2</sup>

SOURCE: Grabill, Kiser, and Whelpton: *THE FERTILITY OF AMERICAN WOMEN*. Census Monograph Series. New York, John Wiley & Sons, 1958, Table 110.

<sup>1</sup> For explanation of overlapping intervals, see text.

<sup>2</sup> Median computed as though the successive intervals were 0.0 to 0.4 years, 0.5 years to 1.4 years, 1.5 years to 2.4 years, etc. That is, the overlapping portions of the successive intervals were split between the intervals.

times, as will be pointed out below, but from the 1960 Census data it will be possible to show in a similar manner the spacing intervals for women who married at a young age shortly after 1940. The spacing data in Table 12 were derived by subtracting the age of the first child from the number of years the mother had been married. The results comprise a series of overlapping intervals as shown in the table but it can be shown that there is concentration of population at the mid-points of each two-year interval and that the extreme limits of each range contain few women.

The mothers who married at age 20 in 1932 had a median spacing of about 2.1 years between marriage and the birth of

the first child; other data, from April 1954, Current Population Survey not shown here, indicate that a median spacing interval of about 1.5 years is more typical in prosperous times. The data in this table indicate that it is necessary to follow the cohort for several years after marriage before as many as three-fourths of the first births are accounted for. Although the data imply that less than half of the first births occur about a year after the marriage, demographers have nonetheless found a very high correlation between annual vital statistics of first births and annual marriages with a lag of one year.

As an interesting sidelight, Table 12 indicates that only about 8 per cent of the mothers in the cohort had their first child after the ninth or tenth year of marriage. This small proportion supports the previous statement that the per cent of women who are childless declines quite slowly after about age 30.

#### SOCIAL AND ECONOMIC FACTORS

*Educational Attainment of Women.* It is well known that there is an inverse relation between the educational attainment of women and their fertility. Hence, one would expect women of higher education to have relatively more childlessness, as is in fact the case. Relatively fewer of the well-educated women marry, although the differences are small below the level of 4 years of college. The average age at marriage increases with advancing education, but, again the differences usually are small and hence not a major factor in the degree of eventual childlessness. A very important reason for the observed differences in rates of childlessness is the fact that a larger proportion of the people with higher education plan the number and spacing of their children, as shown by the Indianapolis Study and other studies. As may be seen from the data in the top half of Table 13, and in Figure 5, an increasing proportion of the married couples with successively higher levels of education are childless in the first two years of marriage. There are some exceptions, however; thus, there is a tendency for women who completed only 1 to 3 years of high

school to have a smaller per cent childless in the early years of marriage than women who completed only 7 or 8 years of school.

The lower half of the table groups data into blocks by similar

Table 13. Per cent childless among white women 15 to 44 years old married once and husband present, by years of school completed, age, and duration of marriage, for the United States: 1950. (Data based on 1 per cent sample. Per cent not shown where base is less than 10,000.)

AGE OF WOMAN AND YEARS MARRIED	NUMBER OF WIVES (000's)	TOTAL	ELEMENTARY		HIGH SCHOOL		COLLEGE	
			0 to 6 Years	7 and 8 Years	1 to 3 Years	4 Years	1 to 3 Years	4 or More
<i>15 to 44 Years Old Married</i>								
Less Than 1 Year	689	91.0	83.2	83.9	88.5	93.4	94.8	96.2
1 Year	684	61.5	53.0	54.6	53.6	64.8	68.4	75.0
2 Years	1,111	41.5	33.0	36.2	34.7	44.1	46.1	55.0
3 Years	1,290	28.4	23.4	23.7	25.1	30.1	31.9	36.4
4 Years	1,199	22.5	17.6	20.9	19.9	23.3	24.4	31.3
5 Years	942	20.4	23.1	20.2	15.8	19.8	24.4	29.9
6 Years	801	17.9	18.8	18.3	16.7	16.4	20.7	22.7
7 Years	859	15.3	13.8	14.7	13.4	15.8	16.1	18.2
8 Years	1,009	15.3	13.3	14.9	14.5	15.7	13.9	17.3
9 Years	897	12.5	11.7	12.2	10.9	12.9	13.4	14.7
10 to 14 Years	3,965	12.9	10.4	12.7	11.4	13.7	14.7	14.7
15 to 19 Years	2,807	11.5	7.0	10.2	10.0	13.3	14.6	15.0
20 Years or More	2,331	9.5	6.9	8.0	8.8	11.5	12.8	17.2
<i>Age, Years Married</i>								
25 to 29, 10 to 14	647	6.4	5.1	4.8	5.2	9.2	10.9	—
30 to 34, 15 to 19	527	5.4	3.9	4.4	4.6	6.7	9.7	—
35 to 39, 20 or More	522	6.7	4.5	5.3	5.8	9.3	11.5	—
25 to 29, 5 to 9	2,141	13.0	13.5	10.6	11.2	12.9	15.5	18.4
30 to 34, 10 to 14	1,813	9.1	7.0	9.4	8.1	9.6	9.6	8.9
35 to 39, 15 to 19	1,468	10.1	6.4	8.9	10.1	10.7	12.5	11.8
40 to 44, 20 or More	1,781	10.3	7.6	8.9	9.9	11.9	12.8	17.1
25 to 29, 0 to 4	1,308	38.3	31.7	34.6	34.6	38.5	39.5	46.7
30 to 34, 5 to 9	1,177	17.2	18.9	19.3	18.2	17.2	14.6	14.3
35 to 39, 10 to 14	1,109	17.1	16.6	17.4	17.9	18.1	15.6	12.8
40 to 44, 15 to 19	793	18.2	12.3	18.1	16.0	21.3	17.4	17.4
30 to 34, 0 to 4	388	43.1	34.0	41.3	43.0	45.9	40.2	41.2
35 to 39, 5 to 9	387	29.9	32.1	32.0	33.5	29.7	24.1	27.0
40 to 44, 10 to 14	374	29.9	27.0	30.9	33.4	29.9	27.0	26.4
35 to 39, 0 to 4	154	56.5	46.6	56.7	54.0	60.0	52.9	60.1
40 to 44, 5 to 9	135	47.6	49.1	48.9	46.4	47.2	47.1	50.6
40 to 44, 0 to 4	67	65.7	—	64.0	61.3	71.8	—	—

SOURCE: 1950 CENSUS OF POPULATION, Series PC-14, No. 22, September 7, 1956, Table 1.

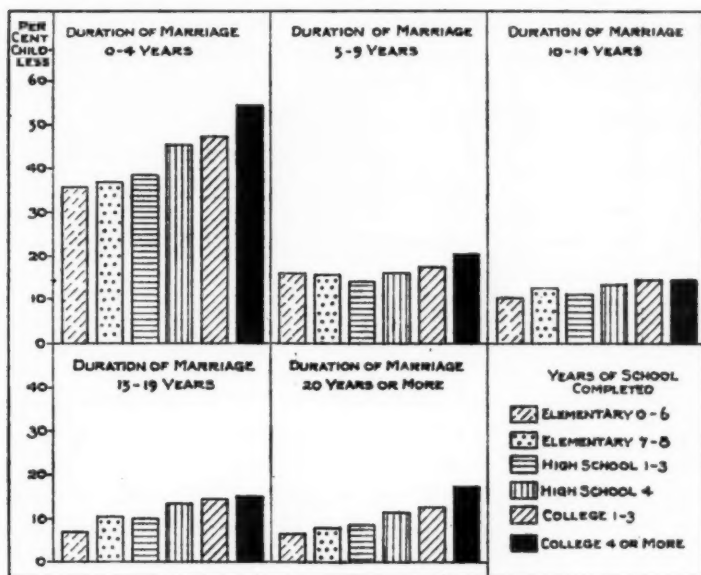


Fig. 5. Per cent childless among white women 15-44 years old, married once and husband present, by duration of marriage and years of school completed, for the United States: 1950. SOURCE: 1950 CENSUS OF POPULATION, Series PC-14, No. 22, September 7, 1956, Table 1.

age at marriage as may be seen if one computes the difference between age at census and years married. The arrangement is suggestive of cohort experience at successive marriage durations, though the 1950 Census data are cross-sectional in nature. The effect of a boom in first births is evident in the data for women 30 to 34 years old, married 10 to 14 years, notably among women with a college education. The same phenomenon, in lesser degree, appears in the data for women 35 to 39 years old, also married 10 to 14 years. The fact that these women were married in the period from 1935 to 1940 means that their low proportion childless reflects birth experience, in part, during the economic depression and in part, during war-time and postwar years. Their husbands were in the upper age range for military service at the time of the outbreak of war.

Table 14. Per cent childless among white women 15 to 44 years old married once and husband present by age of woman, duration of marriage, and major occupation group of husband in experienced civilian labor force, for the United States: 1950. (Data based on 1 per cent sample.)

YEARS MARRIED	TOTAL	OCCUPATION OF HUSBAND								
		Professional and Technical	Managers, Officials, and Priests	Clerical, Sales	Craftsmen and Foremen	Operatives	Service and Household Workers	Laborers Except Farm and Mine	Farmers and Farm Managers	Farm Laborers and Foremen
<i>Married</i>										
Less Than 1 Year	91.0	93.8	93.5	92.6	90.2	90.7	94.9	87.8	89.7	89.1
1 Year	61.5	70.6	65.2	67.3	59.2	55.7	64.9	54.2	60.4	58.0
2 Years	41.5	49.2	45.0	44.2	43.0	38.7	40.5	34.4	35.5	31.9
3 Years	28.4	34.9	30.8	32.9	30.3	24.8	27.9	24.1	20.0	19.0
4 Years	22.5	28.2	24.5	25.3	21.7	20.3	25.6	17.7	16.6	18.4
5 Years	20.4	23.7	21.9	23.5	21.0	16.7	18.0	16.4	15.1	17.0
6 Years	17.9	16.5	19.9	18.8	16.8	17.8	15.4	18.2	15.5	14.0
7 Years	15.3	15.7	17.6	16.7	15.5	14.2	13.8	14.6	12.2	10.8
8 Years	15.3	16.3	18.4	18.5	13.7	12.6	15.9	15.9	9.7	11.5
9 Years	12.5	13.1	14.5	13.2	12.1	11.1	16.9	9.6	8.9	11.7
10 to 14 Years	12.9	14.5	13.5	15.0	12.1	11.5	15.9	12.1	10.1	9.3
15 to 19 Years	11.5	14.7	12.8	13.6	11.2	10.3	13.0	7.7	7.9	7.3
20 Years or More	9.5	12.8	10.7	12.8	8.8	8.2	10.1	6.6	7.4	5.4

SOURCE: 1950 CENSUS OF POPULATION, Series PC-14, No. 22, September 7, 1956, Table 2.

In the third and fourth blocks of the table (13), which are for the minority who married at a relatively advanced age, one may note a tendency for a smaller proportion childless among the women with some college education than among the women with little education.

*Major Occupation Group of Husband.* Data on childlessness by occupation are presented in Table 14. According to some sociologists, occupation is more indicative of "the style of life" than is education or income. If this is the case, then many major occupation groups reflect quite similar "styles of life" in respect to childlessness. It is difficult to judge from the data in Table 14 which of the three "white collar" groups (professional, managerial, and clerical-sales) has the highest proportion childless as there are numerous exceptions. A tally shows that the professional group has the highest per cent childless among white collar workers in 7 out of 14 of the marriage duration intervals shown in the table, with 5 of the 7 for the first five years of marriage. The clerical and sales group tends to rank second, and the managerial and proprietary group third. One of the "blue collar" occupations—the service and household workers group—has as high a proportion childless as the white collar groups but most of the "blue collar" groups (craftsmen, operatives, and laborers) have a small proportion childless. At the other end of the scale of per cent childless, the nonfarm laborers, the farm laborers, or the farmers have the lowest per cent childless for one duration group or another.

*Labor Force Status of Women.* Women who work outside the home tend to be those who have no children of preschool age but half of the married women who work have no children under 18 in the home and four out of every ten have no children of any age. Many of the working wives, of course, have not yet started family building. But most of the women who will ever have a child will have done so by their early thirties. In this context, an example of the selectivity of completely childless women 30 to 34 years old for the labor force participa-

MARITAL STATUS AND LABOR FORCE STATUS	WHITE		NONWHITE	
	Number	Per Cent Childless	Number	Per Cent Childless
All Women	5,276,280	23.5	616,440	36.1
Labor Force	1,489,290	50.6	287,370	47.6
Not in Labor Force	3,786,990	12.9	329,070	26.0
Married Once, Husband Present	3,910,860	14.4	325,980	28.7
Labor Force	756,270	34.6	120,840	43.0
Not in Labor Force	3,154,590	9.6	205,140	20.2

SOURCE: 1950 CENSUS OF POPULATION, Vol. IV, Special Reports, Part 5, Chapter C, Tables 24, 25, 26, and 27.

Table 15. Per cent childless among white and nonwhite women 30 to 34 years old by labor force status, by marital status, for the United States: 1950. (Data based on 2.4 per cent sample.)

tion is given in Table 15. Thus, about 35 per cent of white wives 30 to 34 years old in the labor force have never had a child, as compared with 10 per cent among wives not in the labor force.

*Income.* The Census Bureau's only data on childlessness by income of the husband come from the April 1952 Current Population Survey. As may be noted from Table 16, the proportion of wives who are childless is relatively high in the low-income groups, whereas the opposite situation might be expected from the traditional pattern of highest fertility among the poor. Several explanations for the situation may be offered. A part of the high proportion childless at low income levels comes from a concentration of nonwhite husbands in the lower end of the income distribution. As pointed out above, the proportion childless is about twice

Table 16. Per cent childless among women 15 to 44 years old married and husband present, standardized for age, by income of husband, for urban and rural nonfarm areas: April 1952.

Total	20.8
Under \$1,000	26.0
\$1,000 to \$1,999	28.9
\$2,000 to \$2,999	23.1
\$3,000 to \$3,999	20.0
\$4,000 to \$4,999	17.7
\$5,000 to \$6,999	14.6
\$7,000 and Over	18.5

SOURCE: Bureau of the Census, CURRENT POPULATION REPORTS, Series P-20, No. 46, "Fertility of the Population: April 1952," December 31, 1952, Table 3.

as high among nonwhite as among white women. Another important consideration is the fact that wives of men with low incomes are the most likely to be working outside the home. This explanation is consistent with the evidence just given that women in the labor force have a much higher rate of childlessness than other women. At the other end of the income scale, however, it is noteworthy that the per cent childless tends to be a little larger for women with husbands in the highest bracket than for those in adjacent brackets. This is not in line with the J-shape curve of fertility in relation to economic status found in some other studies.

#### SUMMARY AND CONCLUSIONS

In summary, the changing levels and differential patterns of childlessness are matters of much concern to students of demographic and medical problems. Rates of childlessness rose from about 8 per cent among ever-married women who were in the midst of childbearing nearly a century ago to a peak of 20 per cent for those in the same period of life during the depression years of the 1930's. For women who went through the corresponding period of life during World War II and the early postwar years, the eventual level of childlessness will almost undoubtedly fall again below 10 per cent. (An additional 5 to 8 per cent will never marry.) Thus, the replacement of the population is being shared by a larger proportion of the women than a decade or two ago.

Rates of childlessness were found to be largest among urban nonwhite women, among married women living apart from their husbands, among those whose marriages occur above the average age, among women with broken marriages who subsequently remarry, and among those who delay childbearing during the first ten years of marriage.

When childlessness is studied by social and economic characteristics some of the relationships just listed tend to obscure the picture. With some reservations, however, it may be said that rates of childlessness are somewhat above average for col-

lege-educated women, women whose husbands are in the white collar occupations, women who are in the labor force, and women whose husbands are in the lower income levels. The data suggest the hypothesis that women are more likely to be childless if their husbands have less income than others in the same occupation group, though this hypothesis was not specifically tested.

In conclusion, childlessness, as a demographic phenomenon, is the lower limit in the continuum of parity. Other meaningful analyses can be made, of course, in terms of any specific number of births, from the smallest to the largest. In this context, couples with only one child ever born may well be found to have much the same characteristics as those with no children. To the extent that this is the case, childless wives are representative of all wives of low parity.

# ANNOTATIONS

## A HISTORY OF PUBLIC HEALTH<sup>1</sup>

ANY one who decides to master a special field of knowledge, and to make a life career of that area, must possess a full understanding of the historical development of his chosen field. This axiom is particularly true of a social science, such as the area of public health.

Dr. Rosen has made this knowledge available to the student of public health. For many years, Dr. Rosen has been interested in the flow of events that has occurred, as the science of public health slowly emerged and became an integral part of the daily life of the people. He set for himself the enormous task of collecting all the data that have related to the development of the public health concept from ancient times to the present day and from all parts of the world. After a painstaking collection of a wealth of material, he selected the pertinent information and interpreted it for his readers. The basic public health philosophy that has been developed through the centuries is presented in this book.

This concept is, in essence, that the community has a *direct responsibility* for the protection and promotion of the health and welfare of the individual, and that the individual has, in turn, a direct responsibility to aid the community in protection of community health, even though this may result in personal sacrifice.

As Dr. Rosen states in the text:

The aim of this book is to tell the story of community health action, from its beginning in the earliest civilization to the state

<sup>1</sup> Rosen, George, M.D., Ph.D. M.P.H. (with a foreword by Felix Marti Ibañez, M.D.): A HISTORY OF PUBLIC HEALTH. New York, M. D. Publications, Inc., 1958.

of development achieved at the present in economically and technologically advanced countries of the world.

The text is divided into sections that have a chronological sequence:

- i. The Origins of Public Health
- ii. Health and the Community in the Greco-Roman World
- iii. Public Health in the Middle Ages
- iv. Mercantilism, Absolutism and the Health of the People—1500-1750
- v. Health in a Period of Enlightenment and Revolution—1750-1830
- vi. Industrialism and the Sanitary Movement—1830-1875
- vii. The Bacteriological Era and its Aftermath—1875-1950

The early sections of the book present a great variety of interesting information relating to practices of community sanitation, personal hygiene, medical care, and particularly control of contagion that prevailed during the Greco-Roman period. To our surprise, municipal health administration was a relatively early concept, and occupational health was given due consideration in that early day.

We are accustomed to think of the Middle Ages as a period of social retrogression with little advancement of scientific knowledge. It was also an age of overwhelming pandemics, with little effective knowledge concerning disease prevention. Yet the seeds of a community program for medical care were sown at this period. Public health administration was organized by municipalities on a permanent, and not an emergency basis, and community hospitals were established, particularly for the care of persons with contagious diseases.

Perhaps the most illuminating section of the book is the chapter on "Industrialism and the Sanitary Movement—1830-1875." The part that Chadwick played in the advancement of public health, not only in Great Britain but throughout the world, is clearly presented. We also learn of the debt that American public health owes Chadwick, for it was the influence of Chadwick and his colleagues that resulted directly

in the initiation of sound public health practices in the Western continent.

"The Bacteriological Era and its Aftermath—1875–1950" covers the period of development of public health with which the reader is most familiar. Dr. Rosen emphasizes the fact that, for the first time, the concept of prevention of illnesses could be fully implemented on a rational and comprehensive basis.

Dr. Rosen did not attempt to write a last chapter concerning present trends in public health development. In this he was wise, for interpretation of "contemporary history" is a treacherous field.

Certainly a new concept has arisen during the past half century which is not a direct aftermath of the Bacteriological Era. This growing preoccupation of the students of public health is concerned with the degree and extent—e.g. the breadth and depth of community responsibility for the *comprehensive medical and health care* of the individual and his family. The history of the development of this phase of public health will be the subject of another text some 50 years hence.

Dr. Rosen has provided us with a splendid bibliography, and a well-prepared index.

There is an appendix on "Memorable Figures in the History of Public Health." The list of names is well-selected and informative. Your reviewer regrets, however, the omission of the names of W. T. Sedgwick and M. J. Rosenau.

As a final appendix, one finds a useful list of current public health periodicals from all parts of the world, and also a list of Schools of Public Health throughout the world. The list is arranged by countries.

A HISTORY OF PUBLIC HEALTH was published by M. D. Publications, Inc. It is one of a group of monographs on Medical History that are actually published or are contemplated. These monographs are edited by Dr. Felix Marti Ibañez, Professor of The History of Medicine at New York Medical College.

WILSON G. SMILLIE, M.D.

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POPULATION: AN INTERNATIONAL DILEMMA<sup>1</sup>

MUCH effort has gone into this little book of 89 pages. The reminder is of the Greek philosopher who expressed regret that time did not permit a short letter and therefore he must write a long one. In this instance, the author found time and took time. The result is a straightforward account of the population problem, as it exists today and of what may be done about it. The source material presumably was voluminous, drawn from a series of meetings by a Conference Committee on Population Problems sponsored by The Population Council, Inc. Discussions extended over 19 months and included 23 prepared papers by guest consultants. The easy temptation would be an edited and annotated transcript of what took place. Nor is this a precis; it is a thoughtful digest of critical elements. The general reader is provided an informative text; the expert in one or other phase of this international dilemma will find things not to be had from more pretentious publications. Each of the five chapters has an adequate summary; the neat paragraphs that end sections within chapters give particular delight. The book is in two parts; the first outlines present conditions, the second gives indicated lines of action.

First attention is to the need for rational regulation of births in the modern world by reason of social, political, economic, and health considerations. A separation of the special problems of densely populated areas and those of advanced countries gives weight to the theme of this presentation, that the population problem is worldwide. American attitude is still too much that of a business of faraway places.

An analysis of attitudes and practices affecting fertility, and the influence of religious teaching and morals has the purpose of identifying factors contributing to population growth, and thereby the possibilities for bending them to the desirable end of numbers of people fitted to the material resources of a country or region. Cultures and religions differ so greatly that no

<sup>1</sup> Osborn, Frederick H.: *POPULATION: AN INTERNATIONAL DILEMMA*. New York, The Population Council, Inc., 1958, 89 pp.

single approach, no common program, can expect to have general acceptance. Added to that is the circumstance that "mass reliance for the moment must be placed on contraceptive measures which are only partly effective and not easily accepted, ranging from methods which are fairly effective but require materials out of reach of peasant populations, to incomplete intercourse which requires unusual control, and the rhythm method which is ineffective with untrained people." An obvious conclusion is the need for studies to determine the characteristics, customs, and beliefs about procreation evidenced by particular populations and to test the efficiency of possible control measures when applied under those conditions. The research of today is the practice of tomorrow.

The final chapter of the book is for Americans. What is said applies equally to other countries with a low ratio of population to natural resources, including the Soviet Union, Canada, Australia and New Zealand. Should the United States double its population, a situation toward which it is now heading, standards of living would tend strongly to be lowered. That, as is properly stated, is something for the American people to worry about. The world concern is that such general increases among highly industrialized populations would make for increasing demands on world resources, sufficient to restrict to their present position nations now struggling toward a better human wellbeing. The dilemma is international to the extent that all countries are involved. It is also international in that what happens in one place affects the rest of the universe. No country has a wholly individual problem; the necessary viewpoint is ecologic and holistic.

The statement that the United States is a backward country so far as a population policy is concerned will engender little controversy. Most persons will view that challenge in terms of their own little piece of it. The author leaves no doubt of the obligations of public health, which he considers the most promising vehicle for a national and organized program for controlling size of family. That everyone has a part in the problem is inescapable, for population control is "not an end of itself but only a means of advancing the more general objective of human welfare." In terms of man's existence popu-

lation growth to an extent to give concern is a phenomenon of recent origin, about 200 years. The next generation, the coming 50 years, are critical times.

JOHN E. GORDON, M.D.

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## ABORTION IN THE UNITED STATES<sup>1</sup>

THIS book represents a skillfully condensed transcript of a conference called by the Planned Parenthood Federation of America to discuss the abortion problem in this country. Participants include 38 specialists from the fields of obstetrics, psychiatry, public health, biology, sociology, law, and demography. Discussion ran for two full days and evenings in April and then for another day in June, 1955.

Editorially the book is interesting. Its text reads like the ideal conference which chairmen dream about: everybody sticking to their points, always raised in proper contexts; viewpoints expressed without repetition and a minimum of bickering; social relations so unproblematical that little time need be wasted on amenities such as introductions or acknowledgements. Of course this paragon of group deliberation is partly the product of a hard-working editor and editorial committee who succeeds in "whittling down 600 pages of expertly stenotyped script by about 60 per cent" and "to regroup under appropriate title heads discussion that had been actually scattered over the entire extent of the conference."

Several generalizations emerge from the personal experiences and fragmentary statistics reported by the discussants. Many of the present state laws regarding abortion are obsolete and unrealistic and as a result the legal positions of doctors performing abortions in these states is far from secure. The current trend is to narrow the conditions under which patients are accepted for abortion and generally to elaborate administrative safeguards against easy abortion. Indeed in some

<sup>1</sup> Calderone, Mary S. (editor): *ABORTION IN THE UNITED STATES*. Hoeber-Harper, New York, 1958, vii + 224 pp. \$5.50.

hospitals these safeguards have been carried to a point which eliminates therapeutic abortion as a possibility even in relatively extreme cases. As a consequence of these trends, the incidence of therapeutic abortion, which has never been high in this country, is decreasing still further. But despite this decrease, or perhaps partly because of it, the private patient who can pay a large fee stands a better chance of securing an abortion than does a patient using the public clinics.

The participants in the conference emphatically disagree about what to do concerning the situation outlined above and in attempting to defend their positions they bring out the many sides of the problem: psychiatric, medical, legal, economic, and moral. Thus, for example, some of the discussants prefer to see the psychiatric and socio-economic indications for abortion broadened and the levels of therapeutic abortion raised closer to those common in Scandinavia. These discussants tend to emphasize such things as more freedom of action for the individual physician, a smaller market for the illegal abortionist, and anguish averted especially among pregnant women who are unwed or married mothers with large families. Other discussants who applaud the current decline in therapeutic abortion stress such adverse consequences of abortion as psychiatric trauma for the patient, legal risk for the doctor, and a possible loosening of morals for teenagers. The editorial staff in no way seek to conceal these clashes of view and some of the exchanges are lively.

The group comes closest to agreement on the needs for reforming state abortion laws and rendering access to abortion more equal for private and clinic patients. These concurrences are embodied in the two most specific proposals of the Statement Committee, under the chairmanship of A. F. Guttmacher:

Consultation centers for women seeking abortion, modeled after the Scandinavian centers now in existence, should be established.

Authoritative legal bodies should study the abortion laws in the various states and frame a model law that could, perhaps jointly, be presented to the states for their consideration to replace existing statutes.

The Statistics Committee, under the chairmanship of C. Tietze, does not try to estimate the annual incidence of induced abortions precisely but is content to say that the annual number of induced abortions in this country falls somewhere between 200,000 and 1,200,000. The lower estimate is based on a ratio of 3.1 induced abortions per 100 pregnancies found by C. Kiser and P. K. Whelpton for their Indianapolis sample and also by D. G. Wiehl and K. Berry for a New York City sample. The upper limit is based on a ratio of 18.9 induced abortions per 100 pregnancies reported by the staff of the Institute of Sex Research from their analysis of 5,293 women.

The appropriateness of the upper limit is placed in doubt by an appendix in which Tietze analyzes the representativeness of the ISR respondents in relation to estimates of 1945 distributions for urban white women in the United States. Tietze concludes that the ISR respondents are usefully representative but his tables contradict this conclusion by showing not only gross differences with respect to age, education, and marital status, but also and more important, tangible differences with respect to age-specific marital fertility.

Other appendices include: (a) a digest of present state laws on abortion and contraception; (b) a brief discussion of abortion in Japan, Germany, U.S.S.R., and Finland; (c) a short bibliography; and (d) an index.

ROBERT G. POTTER, JR.

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### THE POPULATION OF JAPAN<sup>1</sup>

THIS volume represents a prodigious amount of work. There are approximately 390 pages of text and accompanying tables, each containing about three times the printed matter found in the usual octavo volume. There are in addition four pages of *Appendices*, sixty pages of *Bibliography*, and five pages of *Index*. Length is, of course, no guarantee of quality,

<sup>1</sup> Tacuber, Irene B.: *THE POPULATION OF JAPAN*. Princeton, New Jersey, Princeton University Press, 1958, 461 pp. \$15.00.

but the reviewer is happy to be able to say that in his opinion it is an excellent piece of work throughout. Moreover, the amount of repetition is quite small and probably is necessary if the lay reader is to follow the author in her analysis of the broad social significance of Japan's population changes in modern times. The demographic analysis is both adequate and competent but this book is far more than a mere demographic analysis. It is also a sociological study which is couched in terms quite understandable to the interested lay reader.

To begin with there is an historical section (Part I) which provides an excellent background for the understanding of the population changes which have taken place during the past century. This survey is primarily sociological in character, i.e., it portrays the cultural features of Japanese life which in a large measure determined the population changes, but it also makes it clear that these population changes exerted an important influence on the social, political and economic developments both currently and in the later period in which interest centers. To the reviewer this historical approach seems absolutely indispensable to the understanding of the development of Japan's population in modern times. Moreover, it provides a preview of the broad type of analysis which is found throughout the book. To the reviewer this Part seems to contain a maturity of thought and a breadth of knowledge which is well maintained throughout.

Part II, *The Transition, 1852-1918*. Here the author shows great familiarity with the data which became available during this period and displays equal competence and discrimination in their use. This is no mere demographic or statistical analysis. An effort has been made to show the intimate relation between the population changes and the changes taking place in all aspects of Japanese culture during this early modern period. In the reviewer's judgment this effort has been highly successful within the limits imposed in even a work of this size.

Part III, *The Changing Population, 1920-1955*. This is the heart of the demographic analysis as the data are, on the whole, abundant and quite reliable. But to speak of this as the heart of the demographic analysis is not to imply that the broad analysis of culture in relation to population change has

been discarded. It has not, but there is now abundant evidence in demographic data to show clearly many of the important relations between population and cultural changes in the development of Japanese society.

Although *Migration* is treated in a separate Part (iv), it might very well have been entitled Internal Migration and treated as a Section of Part III, for it shows very clearly that Migration was one of the most important dynamic means in bringing about the redistribution of Japan's population which accompanied and was effected by her modern industrial and social development. This migratory movement provides clear demographic evidence of a new period of social and cultural development in Japan. But it is recognized as primarily a manifestation of deep-lying social change, and in turn as requiring many and highly significant cultural changes.

Part v, *Expansion*, treats of the extension of the Empire from the Restoration (1868) to the invasion of China and the migration of Japanese into the expanding area under Japanese control, and also of their movement into foreign countries. This movement had been relatively small prior to the establishment of Manchukuo. It gained considerable momentum towards Manchukuo after 1931 and the reviewer cannot cease wondering why even the power-mad military clique did not postpone the further expansion onto the continent until the industrial base of Japan had been broadened and strengthened by another decade of development in Manchukuo.

Part vi, *Natural Movements*, consists of a detailed study of fertility, mortality, and natural increase. This is well done and the accompanying analysis shows clearly the intimate organic relations between these natural movements of population and the all-pervasive cultural changes which are involved in modern industrialization and urbanization. It is made clear that these natural movements undergo changes which may be considered a part of the effort, to a considerable extent unconscious, to adjust population to the changing social and economic environment. Unfortunately, these changes in the natural movements had not been sufficient to prevent a steady rise in the feeling of population pressure which could be rather easily exploited by the ruling cliques.

One may wonder why the discussion in this Part did not precede Part III, *The Changing Population, 1920-55*, since it provides the explanation of the changes in population. However, this is not a matter of great importance and the reviewer would be the last to argue that the logical development of the study of Japan's population demanded a specific order of treatment.

Part VII, *Demography in Peace and War*. The reviewer finds himself at a loss to characterize this final Part in a few words. It is not a summary of what precedes in the usual sense of that term; but in one form or another it makes use of all the careful social and demographic analysis that precedes. It not only provides a careful marshalling of the information one would expect under this title, but it also again demonstrates beyond question the value of combining competent demographic analysis with broad cultural study if one would understand past population changes and would also wish to look ahead a little to the probable changes in the near future.

The reviewer not only believes that this excellent study "will prove to be a landmark of demographic analysis" as Dr. Notestein says in his *Foreword*, he believes it goes far beyond demographic analysis as this term is generally understood. It is a study in social and cultural development in which demographic facts are given a central place but in which they are always treated as integral elements in a larger social situation. It should also be said that the interested layman will find here a discussion of Japan's population which he can understand. It is carefully written and it carefully avoids the use of the technical jargon which mars so much good work in the social sciences. The reviewer hopes that this book will become more than a standard reference source of information on population changes in modern Japan, and that it will be widely used as a good example of the way in which demographic knowledge can contribute to social analysis.

It would be quite possible to point to some minor inconsistencies in different portions of the book, also to a few errors and a number of repetitions. But let him who is without sin in these respects cast the first stone. In the reviewer's judgment it is quite a remarkable study of which not only the author

and those who have aided her may well be proud, but also one which should enhance the status of the study of population as a science.

WARREN S. THOMPSON

## BOOKS

### Publications of the Milbank Memorial Fund

**ANALYSIS OF THE VARIATIONS IN MARRIAGE, FERTILITY, CHRONIC PSYCHIASIS, AND MENTAL HOSPITAL ADMISSIONS WITHIN THE COMMUNITY.** 1937 Annual Conference of the Milbank Memorial Fund, 1938. 20 pages. \$1.00.

**ANALYSIS OF PROBLEMS IN HIGH FERTILITY IN AFRICAN SOCIETIES.** 1931 Annual Conference of the Milbank Memorial Fund, 1932. 176 pages. \$1.00.

**BACKGROUNDS OF SOCIAL MEDICINE.** 1947 Annual Conference of the Milbank Memorial Fund, 1949. 304 pages. \$2.00.

**RESEARCH IN MENTAL HEALTH AND DISEASE. PROCEEDINGS OF THE ROUND TABLE ON MEDICAL ASPECTS OF MENTAL HEALTH AND DISEASE.** 1939 Annual Conference of the Milbank Memorial Fund. New York, Paul B. Hoeber, Inc.; 1939. 720 pages, 218 illustrations. \$2.00.

**CURRENT RESEARCH IN HUMAN FERTILITY.** 1934 Annual Conference of the Milbank Memorial Fund, 1935. 263 pages. \$1.00.

**RESEARCH ON A COMMUNITY MENTAL HEALTH PROGRAM. THE.** 1935 Annual Conference of the Milbank Memorial Fund, 1936. 226 pages. \$1.50.

**FAMILY HEALTH MAINTENANCE DEMONSTRATION, THE. A CONTROLLED, LONG-TERM INVESTIGATION OF FAMILY HEALTH.** Proceedings of a Round Table at the 1933 Annual Conference of the Milbank Memorial Fund, 1934. 251 pages. \$2.00.

**INTERRELATIONS BETWEEN THE SOCIAL ENVIRONMENT AND PSYCHIATRIC DISORDERS.** 1933 Annual Conference of the Milbank Memorial Fund, 1933. 268 pages. \$1.50.

**INTERRELATIONS OF DEMOGRAPHIC, ECONOMIC AND SOCIAL PROBLEMS IN SELECTED UNDERDEVELOPED AREAS. THE.** Proceedings of a Round Table at the 1933 Annual Conference of the Milbank Memorial Fund, 1934. 263 pages. \$1.00.

**NATURE AND TRANSMISSION OF THE GENETIC AND CULTURAL CHARACTERISTICS OF HUMAN POPULATIONS. THE.** 1934 Annual Conference of the Milbank Memorial Fund, 1937. 144 pages. \$1.00.

**NOTES ON THE RELATION TO DISEASE AND DISEASE.** 1940 Annual Conference of the Milbank Memorial Fund, 1939. 263 pages. \$1.00.

**PLANNING EVALUATIONS OF MENTAL HEALTH PROGRAMS.** 1937 Annual Conference of the Milbank Memorial Fund, 1938. 104 pages. \$1.00.

**PROBLEMS IN THE COLLECTION AND COMPARABILITY OF INTERNATIONAL STATISTICS.** 1939 Annual Conference of the Milbank Memorial Fund. 168 pages. \$0.50.

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**PROMOTION OF MATERNAL AND NEWBORN HEALTH. THE.** 1934 Annual Conference of the Milbank Memorial Fund, 1935. 229 pages. \$1.50.

**RESEARCH IN PUBLIC HEALTH.** 1931 Annual Conference of the Milbank Memorial Fund, 1932. 284 pages. \$1.00.

**SELECTED STUDIES OF MIGRATION SINCE WORLD WAR II.** 1937 Annual Conference of the Milbank Memorial Fund, 1938. 344 pages. \$1.00.

**SOCIAL AND PSYCHOLOGICAL FACTORS AFFECTING FERTILITY.** Volumes II, III, IV, and V. New York: Milbank Memorial Fund, 1930, 1932, 1933, and 1938. \$1.00 each.

**TRENDS AND DIFFERENTIALS IN MORTALITY.** 1935 Annual Conference of the Milbank Memorial Fund, 1936. 168 pages. \$1.00.

